

CORNELL UNIVERSITY

OFFICIAL PUBLICATION

FEBRUARY 10, 1949

College of Arts and Sciences

ANNOUNCEMENT
FOR 1949-1950 SESSIONS



The University Calendar

1949-1950

FALL TERM

Registration September 19-20, *Monday* and
Tuesday
Instruction begins Sept. 21, *Wednesday*, 1 p.m.
Thanksgiving recess:
Instruction suspended Nov. 23, *Wednesday*, 12:50 p.m.
Instruction resumed Nov. 28, *Monday*, 8 a.m.
Christmas recess:
Instruction suspended Dec. 21, *Wednesday*, 10 p.m.
Instruction resumed Jan. 5, 1950, *Thursday*, 8 a.m.
Examinations begin Jan. 23, *Monday*
Examinations end Feb. 1, *Wednesday*
Midyear holiday Feb. 2, *Thursday*

SPRING TERM

Registration Feb. 3-4, *Friday* and *Saturday*
Instruction begins Feb. 6, *Monday*, 8 a.m.
Spring recess:
Instruction suspended March 25, *Saturday*, 12:50 p.m.
Instruction resumed April 3, *Monday*, 8 a.m.
Examinations begin May 29, *Monday*
Examinations end June 6, *Tuesday*
Commencement Day June 12, *Monday*

CORNELL UNIVERSITY OFFICIAL PUBLICATION

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Faculty

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FREDERICK BEDELL, Ph.D., Professor of Physics, Emeritus.
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*Leave of absence 1949-1950.

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JULIAN PLEASANT BRETZ, Ph.D., Professor of American History, Emeritus.
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**Leave of absence, fall term, 1949-1950.

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**Leave of absence, fall term, 1949-1950.

***Leave of absence, spring term, 1949-1950.

EDWARD ALLEN SUCHMAN, Ph.D., Assistant Professor of Sociology.
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DON DOUGLAS THORNBURY, A.M., Instructor in English.
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BRYANT TUCKERMAN, Ph.D., Faculty Instructor in Mathematics.
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ERVIN R. VAN ARTSDALEN, Ph.D., Assistant Professor of Chemistry.
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College of Arts and Sciences

THE College of Arts and Sciences offers instruction in classical and modern languages and literatures, philosophy, and music and the fine arts; in history, the social studies, and psychology; and in mathematics and the natural sciences. The Faculty requires: (1) that each student before graduation shall pursue a course, or courses, designed to make him competent in the use of the English language; (2) that he shall demonstrate or achieve proficiency in elementary mathematics and in a foreign language; and (3) that he shall attain a basic knowledge of certain areas of the humanities, the social studies, and the natural sciences. Before the end of the second year the student must have selected a major field of study for the remainder of his work. This requirement is broadly conceived to include a sequential and a related group of courses, by means of which he may secure a degree of mastery of a specialized field of knowledge. The remainder of his course of study is largely elective under the supervision of a faculty adviser whom he chooses and who will assist him in making a reasonable and appropriate selection of courses. Many of the subject offerings of the other Colleges of the University are available to him, either as electives or as related subjects for the fulfillment of his major requirements.

The general purpose of the College of Arts and Sciences is liberal and non-technical. The definition of a liberal college is found in the subjects which make up its curriculum; namely, those subjects which, in the history of human civilization, have distinguished themselves as the means whereby man has come to understand himself and the world in which he lives. As thus conceived, a liberal education is a special knowledge of some general field of human understanding, erected upon a fundamental training, in the humanities, natural sciences, and the social studies.

The facilities of the College are adequate in staff and equipment to give personal attention to the varying needs of individual students, including requirements of a pre-vocational and pre-professional nature. Advanced courses and opportunities for research are available in the undergraduate years to those who are qualified to make use of them; and in addition to his regular courses, a student may work informally under the supervision of his major adviser (see p. 20). Thus he may complete his education in a manner more flexible than would other-

wise be possible. A student is expected to accept a large degree of responsibility for shaping his own course of study, but his adviser stands ready to assist him in all possible ways to make the most of the opportunities offered by the College.

REQUIREMENTS FOR ADMISSION

An applicant for admission to the College of Arts and Sciences must have completed a secondary school course giving satisfactory preparation for the work of the College. Fifteen units of entrance credit are required, representing at least four years' work in a preparatory or high school. Of these fifteen units, three units (four years) shall be in English and two units in algebra covering elementary and intermediate algebra. The remaining units should be made up normally of foreign language (ancient or modern), science, and social studies (including history). Each candidate for admission is required to take the Scholastic Aptitude Test of the College Entrance Examination Board in January and to request the Board to report the result to the Director of Admissions, Cornell University.

All candidates whose applications are approved are required to write, not later than April or June, two College Board Achievement Tests which will be used primarily for placement in courses. These tests are the one in English Composition, and another in a modern language provided the student has had two or more years of instruction in the subject.

Applicants for admission should consult the *General Information* circular issued by the University. This publication contains notes on expenses, including tuition charges and fees, scholarships, loan funds, and on matters of general student interest. The *General Information* circular and all other official publications of Cornell University may be obtained on application to Cornell University Official Publication, 336 Administration Building, Ithaca, New York. Application forms are to be had from the University Director of Admissions, Administration Building, and communications concerning admission should be addressed to him.

Currently the number of applicants so far exceeds the limited number admissible that many normally eligible students must be denied entrance. A committee on Admissions selects those who seem best qualified, after a comparative study not only of formal preparation but also of evidences bearing on each applicant's character, seriousness of purpose, and fitness to undertake the work of the College.

REGISTRATION IN COURSES

During an announced period before the opening of each term, every student will, with the aid of an adviser, prepare a program of studies. For the academic year, 1949-1950, registration for the fall term will be held in the period May 2 to May 11, 1949, and registration for the spring term will be held in the period November 28 to December 7, 1949. Program changes will be permitted during a limited period, for exceptional reasons only, without petition, upon the recommendation of the adviser. For the fall term, 1949, such changes may be made prior to August 15 by students whose schedules were submitted before August 1, and prior to September 1 by students whose schedules were submitted after August 1. For the spring term, 1950, such changes may be made prior to January 15. After these dates changes will be permitted, for extraordinary reasons only, by petition submitted during the first six days of instruction. Students failing to register during the announced periods or failing to make necessary changes within the period allowed for changes may be subject to a \$2.00 fine unless a more extreme penalty is invoked.

No student will be permitted to cancel his registration in any course unless he shall have previously obtained from the Dean authorization to do so on the ground of ill health, or for any other cause beyond the student's control.

UNDERCLASSMEN

ADVISERS

Entering freshmen and students who have been absent on leave will complete pre-registration by mail with advisers who will communicate with them in advance. On registration day, or shortly thereafter, each entering freshman and re-entering underclassman will be assigned to a member of the Advisory Board for Underclassmen, which has jurisdiction over freshmen and sophomores until they have selected major advisers. The function of the underclass adviser is to assist the student in his choice of studies, to advise him during the term regarding his work, and to give him friendly counsel.

SPECIAL PROGRAMS

The facilities of this College are intended primarily for students interested in a liberal arts education, but are also available, by means of the following special programs, to students planning eventually to enter certain of the professions.

PREPARATION FOR TEACHING. Students planning to teach in the secondary school may combine the necessary professional preparation with other prescriptions of the College in satisfaction of the requirements for graduation. A fifth year of preparation is required for the permanent certificate in New York State.

Programs for such students have been arranged in English and Public Speaking, in Foreign Languages, in Social Studies, and in Science and Mathematics. Advice should be sought early regarding teaching opportunities in these subjects, combination of subjects usually required of teachers, choice of the major subject, and related matters.

Questions may be directed to Professor F. H. Stutz, Goldwin Smith Hall, Ithaca, New York, and to members of the Advisory Committee representing the various fields of concentration. New students interested in teaching are requested to confer with Professor Stutz in their first term of residence. (See also the Announcement of the School of Education.)

PRE-MEDICAL STUDENTS. All pre-medical students are requested to report once each semester to the chairman of the Pre-Medical Advisory Board, Professor L. L. Barnes, Rockefeller 155.

Certain minimum admissions requirements are prescribed by all medical schools. Since the most substantial of these requirements is in the field of Chemistry, it is recommended that the freshman pre-medical student include Chemistry in his course of study. Some freshman pre-medical students choose to take two sciences; either Chemistry and Zoology or Chemistry and Physics. Students who plan to make Zoology their major subject will find it advantageous to include Zoology in their freshman programs.

Medical educators are quite generally agreed that when a pre-medical student is planning his college course, he should not allow his interest in science to exclude studies in the humanities. They also agree that it would be unfortunate for the future of medicine if all pre-medical students were to take the same pre-medical course, or major in the same subjects.

The Pre-Medical Advisory Board suggests the following first semester program: English 111 (three hours), French or German (six hours), or Latin (three hours); Chemistry (three hours). The remaining three to six hours should be chosen from the courses listed under Courses Open to Freshmen.

PRE-LEGAL STUDENTS. All pre-legal students are invited to consult with the members of the Law Faculty at any stage of their college course as to their election of subjects and in regard to any other matters pertinent to the legal career. Students taking the six-year combined Arts-Law course who are planning to enter the Law School upon com-

pletion of their work in this College, should also confer with the Secretary of the Law School not later than their sophomore year.

PRE-BUSINESS AND PUBLIC ADMINISTRATION. The School of Business and Public Administration will give predominant weight to the quality of an applicant's previous academic record rather than to the particular courses which he has taken. But students who plan to enter the School are urged to include in their undergraduate programs basic courses in Economics and American Government. Students who expect to concentrate in Accounting or Statistics should take as much work in Mathematics as is feasible. Students who intend to specialize in Public Administration should try to include a course in Constitutional Law in their undergraduate program prior to entering the School.

PREPARATION FOR NURSING. Students interested in nursing as a career will be assigned to Professor F. G. Marcham as adviser. A representative of the School of Nursing will come to the campus early in the first term for conferences with prospective applicants.

COMBINED PROGRAM IN FINE ARTS. Students interested in this course of study should consult Professor Waage at the time scheduled for consultation with advisers in the Orientation Period Program.

NUMBER OF HOURS

An "hour" ordinarily represents attendance once a week at lecture or recitation, or at a laboratory exercise lasting two hours and a half or three hours.

A freshman will usually register in his first term for fifteen hours of work, in addition to the required hours in Physical Training and Military Science (see pp. 120 and 118).

Every student must register in each term for at least twelve academic hours. Underclassmen may register for no more than seventeen academic hours, in any case for no more than five courses, except by permission of the Dean. No upperclassman may register for more than eighteen hours in any term except by permission of the Dean, which will normally be granted, on petition, only to students who have achieved an average grade of 80 or better in preceding work. In addition to the required work in Physical Training and Military Science, a student on probation may not register for more than fifteen academic hours a term.

COURSES OPEN TO FRESHMEN

See also "*Prescribed Subjects and Proficiencies*," pp. 18-20.

The following are the courses in the College of Arts and Sciences regularly open to freshmen, except that (1) a student may not register for any course for which he has not satisfied the prerequisites, if any are specified (see announcement under each course); (2) a student may not register for any course for which he has presented an acceptable equivalent at entrance:

- | | |
|--|--|
| Astronomy 101, 102, 125, 127 | History 101-102, 103-104, 107-108. |
| Biology 1 | Italian 101, 102, 103, 201, 203 |
| Botany 1 | (Division of Modern Languages) |
| Chemistry 101-102, 105-106, 111-112, 115 | Latin 105-106, 107, 109-110, 111-112, 115-116 (Department of Classics) |
| Chinese 101, 102, 103, 201, 203 (Division of Modern Languages) | Literature 101-102 (Division of Literature) |
| Economics 101, 105 | Mathematics 121-122, 129, 131, 133, 171-172-173 |
| English Language 101-102, 103, 201 (Division of Modern Languages) | Music 101-102, 103-104, 401-402, 405-406 |
| English 111-112 | Philosophy 101, 102, 103 |
| The Fine Arts 101-102, 111-112, Architecture 300 | Physics 103, 104, 107, 108 |
| French 101, 102, 103, 201, 203 (Division of Modern Languages) | Physiology 303 |
| French Literature 301-302 (Department of Romance Literature) | Portuguese 101, 102, 103, 201, 203 (Division of Modern Languages) |
| Geology 101-102, 105, 107-108, 111, 115 | Psychology 101, 102 |
| German 101, 102, 103, 105, 201, 203 (Division of Modern Languages) | Russian 101, 102, 103, 201, 203 (Division of Modern Languages) |
| German Literature 151-152, 301-302, and any other for which the student is linguistically prepared | Sociology 101, 102, 104 |
| Government 101, 102, 104 | Spanish 101, 102, 103, 201, 203 (Division of Modern Languages) |
| Greek 101, 103, 201, 203, 209-210 (Department of Classics) | Spanish Literature 501-502 (Department of Romance Literature) |
| | Speech and Drama 131, 133 |
| | Zoology 101-102, 103-104 |

PRESCRIBED SUBJECTS AND PROFICIENCIES

Before registering for his first term, each student must take a qualifying examination in arithmetic and the rudiments of algebra. Students with advanced standing credit in mathematics may be excused from the examination. Those found deficient in elementary mathematical skills will be required to complete Mathematics 111, Basic Mathematics, a one-term course carrying one hour of credit; they must begin the course in the first term and must re-register each term until they pass. Mathematics 111 may not be offered toward fulfillment of Item 4 under Basic Information.

Before graduation each student must satisfy the following subject matter requirements:

A. *English*, by completing 111–112. This course must be begun in the first year of residence. Students demonstrating in class work and by examination a high level of accomplishment in English 111 may be exempted from English 112. Foreign students may satisfy the requirement by offering English Language 201 for which the prerequisite is satisfaction of the proficiency requirement as defined by the Division of Modern Languages.

B. *Foreign Language*. Each student must demonstrate proficiency in one foreign language, ancient or modern. In the ancient languages (Latin, Greek), the requirement may be met by the successful completion of Latin 110 or 112, or Greek 203. In the modern languages the requirement may be fulfilled by passing a proficiency examination. These examinations in the languages in which instruction is offered by the Division of Modern Languages will be given at the beginning and at the end of each regular term.

In each modern language a sequence of two semester-courses is offered: course 101 (six credits), course 102 (six credits). No student is required to take these courses, since the requirement may be satisfied by passing the proficiency examination in the language. Well-prepared students will normally take the proficiency examination at entrance; by passing the examination they fulfill the requirement but receive no credit hours. Those who begin a new language, or one in which their preparation is slight, will ordinarily elect courses 101 and 102 in the language desired, and take the examination at the end of course 102. Those who have had a fair amount of preparation will, at entrance, take the proficiency examination, which will then serve as a placement test, indicating the level at which they may begin collegiate language study. A student who, having passed course 102, fails in the proficiency examination, may complete the requirement by passing course 103, or an equivalent. For

further information see the announcement of the Division of Modern Languages, pp. 73.

A student who enters from a foreign country, and whose mother tongue is not English, will satisfy the foreign language requirement by demonstrating competence in English, which shall be defined for the purpose as a modern foreign language.

C. *Basic Information.* Each student must satisfy a requirement of six hours of credit by passing a course, or a college-credit examination equivalent to such a course, in each of the following groups. The courses approved for this requirement follow:

1. LABORATORY SCIENCE:

Astronomy 101, 102; or, for upperclassmen with sufficient preparation in Mathematics, any six hours in Interpretational Astronomy

Biology 1

Geology 101-102

Botany 1

Physics 103, 104; or the equivalent

Chemistry 101-102; 105-106

Zoology 101-102

2. HISTORY:

History 101 and 102; 103-104; 105 and 106; 107-108; 151-152

3. LITERATURE:

English 251-252; or 329-330

Far Eastern Studies 351-352

French Literature 301-302

German Literature 301-302, 325 and 333; or 365-366

Greek 201 and 203

Italian Literature 407-408

Latin 110 and 205; or 112 and 205

Literature 101-102; 201-202; 211-212; 301-302; 311-312; or 321-322

Russian Literature 301-302

Spanish Literature 501-502

He must also secure credit in a similar manner for a six-hour course in EACH of TWO of the following groups:

4. MATHEMATICS OR A SECOND SCIENCE:

Mathematics 121-122 or any six hours of more advanced courses

Science (a second science chosen from the list in Group 1 above; students who have chosen a *Physical Science* will take a *Biological Science*, and vice versa).

5. PHILOSOPHY:

Philosophy 101-102; 221-222; 225-226; or 321 and 322

6. ECONOMICS OR GOVERNMENT:

Economics 101; or 105, 106

Government 101, and 102 or 104

7. PSYCHOLOGY OR SOCIOLOGY AND ANTHROPOLOGY:

Psychology 101-102

Sociology and Anthropology 101 and one of the following: 102, 103, 210, 228, 301, 431, or 601

8. FINE ARTS, MUSIC, OR SPEECH AND DRAMA:

Fine Arts 101-102

Music 101-102; or 301-302

Speech and Drama six hours chosen from courses 175, 401, 455, 475

Any student who was in residence in this College before July 1, 1946, may satisfy the requirements listed under PRESCRIBED SUBJECTS AND PROFICIENCIES by completing English 111-112; by fulfilling the requirement in a foreign language as specified above; and by passing six-hour courses in History and in a Laboratory Science.

With the permission of the department concerned, a freshman may take, at the end of the first term of a year-course, an additional credit examination covering the work of the second term. This provision applies not only to year-courses but also to such second-term courses as are natural continuations of first-term courses (e.g. Physics 104, following Physics 103). The privilege of receiving credit by such examinations is limited to students of high standing as defined by the department.

UPPERCLASSMEN

MAJOR SUBJECTS

1) *Selection of major subject and adviser.* Before the end of the second year of residence, a student *must* select his major subject from options offered by the departments listed below. He must at the same time choose as his major adviser a designated representative of the department selected. During the remainder of his residence, he will consult with his major adviser in arranging his course and must obtain his signature on the study card before filing it in the Dean's office.

Astronomy	Division of Modern Languages
Botany	Division of Literature
Chemistry	Mathematics
The Classics	Music
Economics	Philosophy
English	Physics
Far Eastern Studies	Psychology
The Fine Arts	Romance Literature
Geology	Sociology and Anthropology
German Literature	Speech and Drama
Government	Zoology
History	

2) *Major Requirements.* Before graduation, a student must complete courses which satisfy the requirement in his major subject. A statement of this requirement, indicating courses and total hours required, appears before the list of courses in each of the departments. The student must also meet the stated requirement of courses in related subjects. The selection of courses to be offered in satisfaction of these requirements is subject to the restriction that twenty-four of the total number of hours must be chosen from other than introductory courses. No student may count toward the one hundred and twenty-hours required for graduation more than forty-eight hours in courses offered by a single department, with the following exceptions: the first six hours of intensive courses in Modern Languages, and the first twelve hours of non-intensive courses for beginners in Latin and Greek. If a comprehensive examination is included in the requirements of the major subject, this must be passed before graduation. Courses completed before the selection of the major subject, including those offered in satisfaction of the prescriptions of the College, may be accepted in fulfillment of these requirements.

Upon recommendation of the major adviser, the Dean may excuse a student registered simultaneously in this College and in another College of the University from not more than eighteen hours of his major requirements.

3) *Informal Study.* The major requirements in certain subjects may be satisfied in part by Informal Study. In those subjects in which Informal Study is arranged a statement to this effect appears before the list of courses. Departments may require Informal Study of some or all of their major students, or may admit them upon application.

Informal Study will consist of reading, reports, experimentation, senior theses, or other work intended to require from the student the expression of initiative in his major subject or in a related field ap-

proved by his adviser. This work will be supervised by the major adviser or by a member of the instructing staff approved by him, and may be tested by examination at the option of the department.

A student who has sixty credit hours is eligible for Informal Study. He may earn credit by this means to the amount of six hours in the junior year, and of twelve in the senior year. A student desiring to do Informal Study outside his major department must secure the approval of the faculty member under whom he proposes to work and of his adviser; he will then submit a petition to the Dean.

ADMISSION TO ADVANCED STANDING

A student admitted to the College of Arts and Sciences from another College of Cornell University, or from any other institution of collegiate rank will receive credit toward the degree of Bachelor of Arts for the number of hours to which his records may, in the judgment of the Faculty, entitle him. In order, however, to obtain the degree of Bachelor of Arts, he must, as a candidate for that degree, have been in residence at least two terms in the College of Arts and Sciences, and in that College only, and he must have completed a minimum of thirty hours while thus enrolled. Under present conditions only students with superior records may hope to be admitted with advanced standing, and preference is likely to be given to students with less than junior standing.

Freshmen in the College of Arts and Sciences may receive credit toward the degree of Bachelor of Arts for certain secondary subjects which are in excess of the minimum required for entrance by passing college-credit examinations in these subjects. Furthermore, freshmen may take college-credit examinations in subjects for which no entrance credits have been offered. Students are eligible to take these college-credit examinations *only* at entrance and at the end of their first term of residence in this College. In all cases, they must furnish the departments concerned with sufficient evidence of preparation to warrant the examinations requested.

CREDIT FOR SUMMER SESSION

Credit for work done in summer sessions at Cornell or elsewhere may be granted to the extent of thirty hours. Applications for such credit must be filed in the Dean's office prior to June 1, where they will be considered and acted upon in accordance with their merits.

DOUBLE REGISTRATION

A student who has completed at least ninety hours in courses given in the College of Arts and Sciences including the prescribed subjects and

proficiencies may, with the permission of the Faculties concerned, be registered both in the College of Arts and Sciences and in the Cornell University Medical College or the Cornell Law School or the School of Business and Public Administration. (See MAJOR SUBJECTS, 2, p. 21.) It should be noted, however, that admission to the Medical College is closely restricted, and that in recent years the Medical College has been able to grant this privilege of double registration to only a small proportion of the fourth-year students of the College of Arts and Sciences who applied and who were formally eligible for it.

A six-year combined course, leading to the A.B. and M.F.A. degrees, is offered by the Department of Fine Arts (see p. 56).

Consult also the italicized statements by the several Departments.

MARKS AND SCHOLASTIC DISCIPLINE

The passing grade is 60; the mark *abs.* represents a course left incomplete by a student's absence from the final examination; *inc.* represents a course left incomplete for other reasons acceptable to the instructor; ζ , a course from which a student withdrew without an official cancellation.

No credit towards graduation will be given for a course in which a mark of less than 60 or in which one of ζ is recorded, unless the course be repeated and a passing mark received. A student who has received a mark between 50 and 59, inclusive, in any course that is a prerequisite of any other course may, at the discretion of the department concerned, be regarded as having satisfied the prerequisite.

A student who, in any course, has received a term mark of *inc.* or of *abs.* may, with the consent of the Dean, and upon payment of the fee required by the University, be permitted to remove the mark, by examination or otherwise, as the department concerned may direct. A mark of incomplete or of absent may not be removed later than registration day of the third term of attendance in the University, dating from the time the course was taken, and no more than one attempt at removal will be allowed.

A student who in any term does not pass twelve hours (excluding courses in Military Science and Physical Training), with a grade of 70 or better in at least nine of the twelve hours, will be either dropped from the College or placed upon probation. Students on probation may not register in any Summer Session other than the Cornell Summer Session with the expectation of receiving credit in this College.

Students failing to make normal progress in fulfilling the require-

ments in Military Science and Physical Training will be given special warning or dismissed from the College.

A student's general record may be so unsatisfactory that the Faculty will refuse him permission to continue in the College even though he has passed twelve hours in the preceding term.

A student failing in the last term, or Summer Session, of his senior year to meet the requirements in hours and grades described above, will ordinarily be expected to return for another Summer Session wherein he will be required to make a satisfactory record before he will be graduated.

REQUIREMENTS FOR GRADUATION

The College of Arts and Sciences offers one degree only, the Bachelor of Arts. This degree will not be conferred upon any student who has not been in residence at Cornell during the last two terms preceding graduation, and registered in the College of Arts and Sciences, nor upon any student who has not been in residence during at least two terms in the College of Arts and Sciences and in this College only.

THE DEGREE OF BACHELOR OF ARTS

A candidate must meet the following requirements for the degree of Bachelor of Arts:

1. Credit for one hundred and twenty hours, of which at least ninety hours must be for courses given in the College of Arts and Sciences. Elementary courses in Military Science and Tactics and Physical Training, which are offered under the jurisdiction of the University, but not of any College, *may not* be counted as part of the thirty hours which a student may elect outside the College of Arts and Sciences, nor as part of the ninety hours required in the College. However, advanced courses in Military Science and Tactics *may* be counted in the thirty hours allowed outside this College, to a maximum of twelve hours (see page 118). Certain courses in Naval Science and Tactics are also open to civilian students in the College of Arts and Sciences who secure permission to register from the Professor of Naval Science and Tactics. For a statement of the credit carried by these courses see p. 119.

2. A grade of 70 or better in at least seventy-two of the required one hundred and twenty hours.

At least three-fifths of the hours in the major subjects must be passed with a grade of 70 or better.

3. Election of courses in accordance with PRESCRIBED SUBJECTS AND PROFICIENCIES, pp. 18-20.

4. Completion of the work in Military Science and Physical Training as prescribed by the University Faculty (see pp. 118 and 120).

BACHELOR OF ARTS WITH DISTINCTION

The degree of Bachelor of Arts with Distinction in the field of a student's major subject will be conferred upon those students who, in addition to having completed the requirements for the degree of Bachelor of Arts, shall (1) have received a grade of 85 or better in at least sixty hours of the courses for which they have been enrolled, and an average of 85 in the courses for which they have been enrolled in the field of their major subject and its related courses; (2) have, at the option of the department, taken and passed with distinction a comprehensive examination in the major subject; (3) have been recommended for the said degree by the department representing their major subject.

The degree of Bachelor of Arts with Distinction in all subjects will be conferred upon those students who, in addition to having completed the requirements for the degree of Bachelor of Arts, shall (1) have received the grade of 80 or better in at least ninety hours of courses, and of 90 or better in at least sixty of these; (2) not have received a grade below 70 in more than one course; (3) have received no marks lower than 60. To qualify for the degree of Bachelor of Arts with Distinction in all subjects, a candidate must have completed at least sixty hours at Cornell in courses taught in the College of Arts and Sciences; and if he has received credit towards his degree for work done in another institution, the requirement of grades shall be prorated for the residue of work which must be completed in Arts and Sciences at Cornell.

SCHOLARSHIPS AND PRIZES

Scholarships and prizes open to students of Arts and Sciences as members of the University are listed in the *General Information* booklet, *Announcement of Prize Competitions*, and the *Announcement of Scholarships and Grants-in-Aid*. Only students of Arts and Sciences are eligible for the scholarships and prizes described here.

THE GEORGE C. BOLDT MEMORIAL SCHOLARSHIPS

Mr. George C. Boldt, Jr., has created three scholarships, each of them worth four hundred dollars, as a memorial to his father. These scholarships will be awarded at the close of the junior year to the three men students of the College who shall be considered most deserving of this aid. Applications for these scholarships must be filed in the Office of the Dean before March 15 of the academic year preceding the year for

which they are awarded. Students enrolled both in this College and in the Law School, the Medical College, or the Graduate School are not eligible.

CHESTER BUCHANAN MEMORIAL SCHOLARSHIP

A gift of Mrs. Claire F. Buchanan, in memory of her son, Chester Buchanan, carries an annual stipend of sixty dollars. It is awarded each year on the recommendation of the Department of Geology to the outstanding male senior who is majoring in this subject.

THE CORNELIA L. HALL SCHOLARSHIP

A gift of the late Mary F. Hall has established the Cornelia L. Hall Scholarship, worth one hundred and twenty dollars, "open to any meritorious young woman of this State, who is pursuing the studies of the A.B. course and who is in need of financial assistance." Under the terms of the bequest, preference must be given to a suitable candidate from Tioga, Tompkins, or Chemung County; within this preferred class, women of senior or junior standing will be regarded as entitled to first consideration. Applications for the scholarship must be filed in the Office of the Dean before March 15 of the academic year preceding the year for which it is awarded.

KENNETH O. REED MEMORIAL SCHOLARSHIP

The Kenneth O. Reed Memorial Scholarship was established by Professor and Mrs. Harold L. Reed in memory of their son, Lieutenant Kenneth O. Reed, Cornell 1941. The sum of seven hundred and twenty dollars will be made available annually. The scholarship will be awarded on the basis of qualifications of character, personality, and habit, as well as intellectual accomplishment and promise, to a junior or senior in the College who is a graduate of Ithaca High School. Preference will be given to students majoring in the social studies. In the event there is no acceptable applicant among juniors and seniors the scholarship may be awarded to a freshman or a sophomore in the College of Arts Sciences who has indicated his intention of majoring in one of the social subjects.

Application should be filed with the Dean of Students prior to May 1 of the academic year preceding the year for which the scholarship is awarded.

THE GEORGE CHAPMAN CALDWELL PRIZE

The George Chapman Caldwell Prize of fifty dollars, established in 1913, is awarded by the Staff of the Department of Chemistry to a member of the senior class in Arts with a major in Chemistry for general excellence in Chemistry.

THE BESS BERLOW COHAN PRIZE

The Bess Berlow Cohan Prize of one hundred dollars, established in 1939, is awarded by a committee to the member of the senior class who has shown the greatest ability and progress in a combined study of Classics and English.

THE JULIETTE MACMONNIES COURANT PRIZE

The Juliette MacMonnies Courant Prize, founded by Mrs. Margaret MacMonnies Courant in memory of her daughter, consists of about forty dollars, either in cash or books as the recipient may determine. It is awarded annually to that woman student of the senior class whose major subject is French and who shall, in the opinion of the committee of award, have made the best record in her four years of work, with especial reference to facility of expression in French.

THE DUNIWAY PRIZE

The Duniway Prize, founded by a bequest of the late Clyde A. Duniway, will be awarded annually to the best senior majoring in History or in Government and shall consist of books in the fields of History and Government to the value of approximately thirty dollars. In selecting the winning candidate, the committee of award shall take into account his academic record, his ability to express himself clearly and idiomatically in speaking and writing, and his scholarly approach.

THE HAROLD ADLARD LOVENBERG PRIZE

The Harold Adlard Lovenberg Prize of forty dollars, established in 1939, is awarded by the Staff of the Department of Chemistry to a member of the junior class in Arts with a major in Chemistry, for general excellence.

Courses of Instruction

The following list of courses will be offered in the academic year 1949-1950. Courses numbered from 100 to 200 are, in general, introductory, and may not be offered, save when so specified by the departments concerned, in partial satisfaction of major requirements. Branches or divisions of a subject are usually indicated through use of the hundreds place digit from 2 to 9 inclusive. Courses primarily for graduates, but open to undergraduates under certain conditions, bear numbers 75 or larger—Geology 395-396, Philosophy 575-576, etc. The student should read carefully the italicized statements preceding the offerings of each department and division in which he selects courses.

A list of rooms in which all lectures, recitations, and laboratory exercises are to be held will be distributed before the commencement of instruction:

ASTRONOMY

Mr. R. W. SHAW, *Chairman*; Miss M. E. STAHR.

For a major in Astronomy the following courses must be completed: (1) in Astronomy, courses 101 and 102, twelve hours of Interpretational Astronomy, six hours of Observational Astronomy, six hours of electives; (2) in related subjects, at least fifteen hours selected from approved courses in Chemistry, Geology, Mathematics, and Physics. Students who anticipate a major in Astronomy should complete Astronomy 101 and 102 not later than the sophomore year.

101. *INTRODUCTION TO ASTRONOMY*. Fall term. Credit three hours. Lectures, T Th 11. Laboratory, M T W Th 2-4. Mr. SHAW.

Fundamentals of astronomy with emphasis on the Planets, Moon, Comets, Meteors, the Solar System as a Unit, and Telescopes. Observation at Fuyertes Observatory.

102. *INTRODUCTION TO ASTRONOMY*. Spring term. Credit three hours. Lectures, T Th 11. Laboratory, M T W Th 2-4. Mr. SHAW.

Fundamentals of astronomy with emphasis on the Sun, the Stars, the Galaxy, the Sidereal Universe, and Spectroscopy. Observation at Fuyertes Observatory.

[125. *AIR NAVIGATION*. Fall term. Credit three hours. Mr. SHAW. Not offered in 1949-1950.]

[127. *NAVIGATION AND NAUTICAL ASTRONOMY I*. Fall term. Credit three hours. Prerequisite, Plane Trigonometry. Mr. SHAW. Not offered in 1949-1950.]

[128. *NAVIGATION AND NAUTICAL ASTRONOMY II*. Spring term. Credit three hours. Prerequisite, Plane Trigonometry. Mr. SHAW. Not offered in 1949-1950.]

INTERPRETATIONAL ASTRONOMY

221. *ORIGIN OF THE SOLAR SYSTEM*. Fall term. Credit three hours. Prerequisite, the Calculus. M W F 11. Mr. SHAW.

Analysis of the physical and chemical properties of the members of the solar system. Critical study of the proposed modes of origin and evolution of the system. Age of the planets. Other planetary systems. General problem of origins.

226. *THEORY OF ORBITS*. Spring term. Credit three hours. Prerequisite, the Calculus. M W F 12. Miss STAHR.

Theory of objects moving according to Newton's Law of Gravitation. Determination of the elements of the orbit of a comet or asteroid from three or more observations. Use of computing machines.

231. *STELLAR STRUCTURE*. Spring term. Credit three hours. Prerequisite, the Calculus. M W F 11. Mr. SHAW.

Theory of radiation. Stellar atmospheres and internal structure. Energy sources. Stars with extended atmospheres. White dwarfs. Interstellar matter.

[238. *ASTROCHEMISTRY*. Spring term. Credit three hours. Prerequisite, the Calculus. Mr. SHAW. Not offered in 1949-1950.]

[241. *THE GALAXY*. Fall term. Credit three hours. Prerequisite, the Calculus. Miss STAHR. Not offered in 1949-1950.]

[244. *EXTERNAL GALAXIES*. Spring term. Credit three hours. Prerequisite, the Calculus. Miss STAHR. Not offered in 1949-1950.]

259. *SPECIAL TOPICS IN ASTRONOMY*. Fall term. Repeated in the spring term. Credit one to three hours. Prerequisite, consent of the instructor. STAFF.

Qualified students may receive instruction in special topics selected according to their needs and preparation.

OBSERVATIONAL ASTRONOMY

[461. *ASTRONOMICAL SPECTROSCOPY*. Fall term. Credit three hours. Mr. SHAW. Not offered in 1949-1950.]

464. *ASTROMETRY*. Fall term. Credit three hours. Prerequisite, consent of the instructor. T Th 12 and one laboratory period to be arranged. Miss STAHR.

Determination of stellar positions from photographic plates. Parallax and proper motions. Orbits of visual binaries. Sunspots. Occultations. Use of the coordinate measuring machine and the filar micrometer. Practise in astronomical photography. Emphasis is on observational methods and techniques.

[468. *PRACTICAL ASTRONOMY*. Spring term. Credit three hours. Prerequisite, consent of the instructor. Two lecture periods and one observational period to be arranged. Mr. SHAW. Not offered in 1949-1950.]

BOTANY

Mr. LEWIS KNUDSON, *Chairman*; Messrs. D. G. CLARK, R. T. CLAUSEN, O. F. CURTIS, M. F. MOSELEY, W. C. MUENSCHER, L. C. PETRY, L. F. RANDOLPH, C. H. UHL.

For a major in Botany the student must complete courses 1 and 117 and two of the following courses: 31, 123, 124 and 126, and in addition one course of three or four hours' credit in the field of Botany. In related subjects eighteen hours must be selected from approved courses in Bacteriology,

Biochemistry, Chemistry, Entomology, Geology, Physics, Plant Pathology, and Zoology. The course in Genetics may be offered either as a course in Botany or in the related subjects.

For a major in Botany with advanced work in Bacteriology, the following courses must be completed: (1) in Botany, courses 1, 31, 117; in Bacteriology, eight hours of advanced courses approved by the Department of Botany; (2) in related subjects, eighteen hours to be selected from the list given in the paragraph above.

Provisions are made for a limited number of students to undertake Informal Study.

1. **GENERAL BOTANY.** Throughout the year. Credit three hours a term. If taken after Biology, credit two hours a term. Lectures, T Th 9 or 11. Laboratory, M T W Th or F 2-4:30; and some morning sessions to be arranged. Mr. PETRY and instructors.

A survey of the fundamental facts and principles of plant life. The work of the first term deals with the structures and functions of the higher plants, with special emphasis on their nutrition. The work of the second term traces the evolution of the plant kingdom, as illustrated by representatives of the principal groups, and concludes with a brief introduction to the principles of classification of the flowering plants.

31. **PLANT PHYSIOLOGY.** Either term. Credit four hours. Prerequisite, Botany 1, or Biology, and Introductory Chemistry. Lectures, T Th 10. Laboratory, T Th 2-4:30, W F 2-4:30, or M 2-4:30, S 8-10:30. Messrs. KNUDSON, CURTIS, and CLARK.

This course is designed to acquaint the student with the general principles of plant physiology. Topics such as water relations, photosynthesis, translocation, digestion, respiration, mineral nutrition, growth, and reproduction are studied in detail. Particular emphasis is placed, both in laboratory and in classroom, on discussion of principles and their application to plants.

55. **WEEDS AND POISONOUS PLANTS.** Fall term. Credit three hours. Prerequisite, Botany 1, or its equivalent. Lectures, F 8. Laboratory, W F 2-4:30. Mr. MUENSCHER and assistant.

Special emphasis is given to the habits, characteristics, and properties which make weeds and poisonous plants harmful or undesirable, the losses and injury produced by them, and the methods for their prevention, eradication, and control.

56. **SEED ANALYSIS.** Spring term. Credit one hour. Prerequisite, Botany 1, or its equivalent. Lectures and laboratory, F 2-4:30. Mr. MUENSCHER and assistant.

A course designed for students in the applied plant-science departments and those interested in preparing to be seed analysts. Practice is given in making purity analyses and germination tests according to standard and official methods and recommendations.

115. **AQUATIC PLANTS.** Spring term. Credit three hours. Prerequisite, Botany 1, or its equivalent. Lecture, M 9, Laboratory, M W 2-4:30, Plant Science 353. Mr. MUENSCHER.

A study of the taxonomy and ecology of fresh-water plants, beginning with the algae and concluding with the aquatic angiosperms.

117. **TAXONOMY OF VASCULAR PLANTS.** Fall term. Credit four hours. Prerequisite, course 1 or its equivalent. Lectures, T Th 9. Plant Science 143. Laboratory, T Th 2-4:30. Plant Science 211. Mr. CLAUSEN.

A survey of the families of ferns, gymnosperms, and dicotyledons, their gross morphology, geographical distribution, and economic importance. Methods of identification are stressed. In the early part of the term, several trips will be scheduled during

laboratory periods. Courses 117 and 118 are planned as a unit, though either course may be taken alone providing that the prerequisites are fulfilled.

118. *TAXONOMY OF VASCULAR PLANTS*. Advanced course. Spring term. Credit four hours. Prerequisite, course 117 and either course 124 or Plant Breeding 101. Lectures, T Th 9. Plant Science 143. Laboratory, T Th 2-4:30. Plant Science 211. Mr. CLAUSEN.

A continuation of course 117, including a consideration of the families of monocotyledons; a study of variation, natural selection, isolating mechanisms, hybridity and modes of reproduction in relation to taxonomy; and a brief survey of the vegetation of North America. Attention is also given to the literature of the subject and to taxonomic methods. The laboratory periods afford opportunity for a detailed study of the spring flora of the Cayuga region.

COMPARATIVE MORPHOLOGY OF FUNGI. Offered by the Department of Plant Pathology.

123. *PLANT ANATOMY*. Fall term. Credit four hours. Prerequisite, Botany 1, or its equivalent, and consent of the instructor. Lecture and laboratory, T 9-12:30 and Th S 9-11:30. — Mr. MOSELEY.

This course is designed to give a working acquaintance with the internal morphology of vascular plants, and emphasis is placed on practice in interpretation and determination of material. The course is planned primarily for students in applied fields of botany, such as pathology, pomology, or genetics. Students desiring a less detailed training in this subject should take Botany 126.

124. *CYTOLOGY*. Fall term. Credit four hours. Prerequisite, Botany 1, or Zoology 101-102 or its equivalent. Lectures, M W 9. Laboratory, M W or T Th 10-12:30. Assignment to laboratory section must be made at time of registration. Mr. UHL.

The principal topics considered are protoplasm, cells and their components, nuclear and cell division, meiosis and fertilization, and the relation of these to the problems of development, reproduction, taxonomy, and heredity. Both plant and animal materials are used. Microtechnic is not included.

126. *MORPHOLOGY OF VASCULAR PLANTS*. Throughout the year. First term is prerequisite to second. Credit three hours a term. Prerequisite, Botany 1 or its equivalent, and consent of the instructor. Lecture, F 9. Laboratory, W 9-12:30 and F 10-12:30. — Mr. MOSELEY.

An advanced course in the comparative morphology, life histories, and phylogeny of vascular plants.

171. *SPECIAL PROBLEMS IN GENERAL BOTANY, TAXONOMY, MORPHOLOGY, ANATOMY, PALEOBOTANY, ECONOMIC BOTANY, CYTOLOGY, AND PHYSIOLOGY*. Throughout the year. Credit not less than two hours a term. Hours by appointment.

Students engaged in special problems or making special studies may register in this course. They must satisfy the instructor under whom the work is taken that their preparation warrants their choice of problem.

224. *CYTOGENETICS*. Spring term. Credit three hours. Prerequisites, Botany 124, Plant Breeding 101, and permission to register. Lectures, M W 9. Laboratory, M or W 10-12:30.

An advanced course dealing mainly with the chromosome mechanism of heredity and with recent researches in cytology, cytotaxonomy, and cytogenetics. Mr. RANDOLPH.

231. *PLANT PHYSIOLOGY, ADVANCED LECTURE COURSE.* Throughout the year. Credit three hours a term. Limited to seniors and graduate students. Prerequisite, training in Botany and Chemistry, to be determined in each case by the Department. Lectures, M W F 10. Mr. KNUDSON and Mr. CURTIS.

232. *PLANT PHYSIOLOGY, ADVANCED LABORATORY COURSE.* Throughout the year. Credit three hours a term. Prerequisite or parallel, Botany 231. Laboratory, M 2-4:30 and S 8-12:30. Messrs. KNUDSON, CURTIS, and CLARK.

CHEMISTRY

Mr. PETER DEBYE, *Chairman*; Messrs. SIMON H. BAUER, ALFRED T. BLOMQUIST, J. K. BRAGG, THOMAS R. BRIGGS, CORNELIUS K. CAIN, DeLOS F. DeTAR, P. J. FLORY, JAMES L. HOARD, JOHN R. JOHNSON, ALBERT W. LAUBENGAYER, FRANKLIN A. LONG, D. R. MILLER, WILLIAM T. MILLER, EARL E. MUSCHLITZ, MELVIN L. NICHOLS, JACOB PAPISH, HARVEY W. POSVIC, RICHARD A. REINHARDT, HAROLD A. SCHERAGA, MICHELL J. SIENKO, ERVIN R. VAN ARTSDALEN, LLOYD A. WOOD.

All courses listed below, except Chemistry 220 and 307 (Fall term) and 308 (Spring term), will be given in the Baker Laboratory of Chemistry.

For a major in Chemistry the following Courses must be completed: (1) in Chemistry, courses 105-106, 201, or 205 and 207; or, preferably 111-112, 115, and 212; 215, or 220 and 222; 307-308, 311; 407-408, 411; and six hours of electives; (2) in related subjects, Mathematics 161-162-163; or 171-172-173; Physics 103 and 104; or 107 and 108; German 101, unless two units have been offered for entrance.

INORGANIC CHEMISTRY

Students exceptionally well prepared in chemistry should read the section on p. 22 in regard to college-credit examinations.

101-102. *GENERAL CHEMISTRY.* Throughout the year. Credit three hours a term. Chemistry 101 is prerequisite to Chemistry 102. A terminal course for those students who do not intend to take more chemistry. Will not serve as prerequisite for more advanced courses in chemistry. Secondary school chemistry is not prerequisite. Lectures, Fall term: M F 10 or 12. Spring term: M F 10 or 11. Laboratory, M T W Th or F 8-11, 10-1, or 1:40-4:30, or S 8-11. Conference, one hour a week, to be arranged. Mr. WOOD, Mr. POSVIC, and assistants.

Emphasis on the more important chemical principles and facts, on the scientific method, and on the relation of chemistry to the other fields of knowledge and to everyday life.

105-106. *GENERAL CHEMISTRY.* Throughout the year. Credit three hours a term. Chemistry 105 is prerequisite to Chemistry 106. For those students who will take more chemistry, and serving as a prerequisite to the more advanced courses in chemistry. Secondary school chemistry is not prerequisite. May be elected by students who do not intend to take more chemistry. Lectures, T Th 10, 12, or 3. Laboratory, M T W Th or F 8-11, 10-1, or 1:40-4:30, or S 8-11. Conference, one hour a week, to be arranged. Mr. VAN ARTSDALEN, Mr. REINHARDT, and assistants.

The important chemical principles and facts will be covered, with considerable attention given to the quantitative aspects and to the technics which are important for further work in chemistry.

111-112. *INTRODUCTORY INORGANIC CHEMISTRY*. Throughout the year. Credit, Chemistry 111 three hours, Chemistry 112 two hours. Chemistry 111 is prerequisite to Chemistry 112. Chemistry 115 must be taken with Chemistry 111, except by consent of the instructor. Open to those students who have offered high school chemistry for entrance. Required of candidates for the degree of B. Chem. Eng. and recommended for candidates for the degree of A.B. with a major in Chemistry. Lectures, Fall term, M W F 8; Spring term, W F 8. Mr. LAUBENGAYER and Mr. SIENKO.

115. *INTRODUCTORY INORGANIC LABORATORY*. Fall term. Credit three hours. Must be taken with Chemistry 111. Laboratory, T Th 8-11, W F 10-1, or W 1:40-4:30 and S 10-1. Conference, one hour a week to be arranged. Mr. LAUBENGAYER, Mr. SIENKO, and assistants.

575-576. *ADVANCED INORGANIC CHEMISTRY*. Throughout the year. Credit three hours a term. Prerequisite or parallel courses, Chemistry 403-404, or 407-408, or consent of the instructor. Chemistry 575 is prerequisite to Chemistry 576. Open to upperclassmen and graduate students. Lectures, M W F 11. Mr. LAUBENGAYER.

Theories of atomic structure and chemical bonding are applied systematically to the elements as they appear in the Periodic System, with emphasis on the stereochemistry of inorganic substances.

580. *ADVANCED INORGANIC LABORATORY*. Either term. Credit two to six hours. Prerequisite, Chemistry 307-308 and 311 and 312, and consent of the instructor. Chemistry 580 is designed to accompany Chemistry 575-576 but may be taken separately. Hours to be arranged. Mr. LAUBENGAYER and Mr. VAN ARTSDALEN.

Laboratory practice. The preparation, purification, properties, and reactions of inorganic compounds, including those of the rarer elements.

585-586. *SELECTED TOPICS IN ADVANCED INORGANIC CHEMISTRY*. Throughout the year. Credit two hours a term. Students may register for either term separately. Prerequisite, Chemistry 403-404, or 407-408 and consent of the instructor. Instructors and topics to be announced and hours to be arranged.

Detailed consideration is given each term to one or two special topics selected from the field of theoretical and experimental inorganic chemistry. Topics are varied from year to year.

[590. *CHEMISTRY OF THE RARE ELEMENTS*. Either term. Credit two or more hours. Prerequisite, Chemistry 575-576. Hours to be arranged. Mr. PAPISH.

Laboratory practice. Extraction, recovery, and purification of the rare elements, and preparation of their salts. Chemical analysis of the rare elements. Not offered in 1949-1950.]

ANALYTICAL CHEMISTRY

201. *INTRODUCTORY QUALITATIVE ANALYSIS*. Short course. Either term. Credit three hours. Prerequisite, Chemistry 105-106, or 111 and 115. Enrollment may be limited, especially in the spring term. Lecture, W 12. Laboratory, T Th 1:40-4:30 (either term) or T Th 8-11 (fall term only). Mr. BAUER, Mr. LONG, and assistants.

A study of the properties and reactions of the common elements and acid radicals, and their detection in various solutions and solids.

205. *INTRODUCTORY QUALITATIVE ANALYSIS*. Fall term. Credit three hours.

Prerequisite, Chemistry 105-106, or 111-112 and 115. Chemistry 207 must be taken with Chemistry 205. Lectures, M W F 9. Mr. BAUER, Mr. LONG, and assistants.

A study of the application of the theories of general chemistry to the systematic separation and detection of the common elements and acid radicals.

207. INTRODUCTORY QUALITATIVE LABORATORY. Fall term. Credit three hours. Prerequisite, Chemistry 105-106, or 111-112 and 115. Must be taken with Chemistry 205. Laboratory, M W F 1:40-4:30. Mr. BAUER, Mr. LONG, and assistants.

A study of the properties and reactions of the common elements and acid radicals, and their detection in various solutions and solids.

212. INTRODUCTORY QUALITATIVE ANALYSIS. Spring term. Credit five hours. Prerequisite, Chemistry 111 and 115. Must be taken with Chemistry 112. Required of candidates for the degree of B. Chem. Eng. and recommended for candidates for the degree of A.B. with a major in Chemistry. Lectures, M S 8. Recitation, one hour a week, to be arranged. Laboratory, T Th 8-11, W F 10-1, or W 1:40-4:30 and S 10-1. Mr. BAUER, Mr. LONG, and assistants.

A study of the application of the theories of general chemistry, and the properties and reactions of the common elements and acid radicals to their systematic separation and detection, and their detection in various solutions and solids.

215. INTRODUCTORY QUANTITATIVE ANALYSIS. Short course. Either term. Credit four hours. Prerequisite, Chemistry 201, or 205 and 207, or 212. Lectures, M W 12. Laboratory, M W or T Th 2-4:30, (either term) or T Th 8-10:30 (spring term only). Mr. NICHOLS, Mr. SCHERAGA, and assistants.

A study of the fundamental principles of gravimetric and volumetric analysis, and the analysis of various substances by these methods.

220. INTRODUCTORY QUANTITATIVE ANALYSIS. Either term. Credit three hours. Prerequisite, Chemistry 201, 205 and 207, or 212. Chemistry 222 must be taken with Chemistry 220. Required of candidates for the degree of B. Chem. Eng. and recommended for candidates for the degree of A.B. with a major in Chemistry. Lectures, M W 10. Recitation, one hour a week, to be arranged. Mr. NICHOLS, Mr. SCHERAGA, and assistants.

A study of the fundamental principles of gravimetric and volumetric analysis with practice in stoichiometry.

222. INTRODUCTORY QUANTITATIVE LABORATORY. Either term. Credit three hours. Prerequisite, Chemistry 201, 205 and 207, or 212. Must be taken with Chemistry 220. Required of candidates for the degree of B. Chem. Eng. and recommended for candidates for the degree of A.B. with a major in Chemistry. Laboratory, F 1-4:30 and S 9-12:30 (either term) or T Th 9-12:30 (fall term only). Mr. NICHOLS, Mr. SCHERAGA, and assistants.

Laboratory practice in the preparation and standardization of various volumetric solutions and the analysis of a variety of substances by volumetric and gravimetric methods.

240. SPECIAL METHODS OF QUANTITATIVE ANALYSIS. Either term. Credit three hours. Prerequisite, Chemistry 220 and 222, or consent of the instructor. Primarily for candidates for the degree of B. Chem. Eng. Lecture, T 11. Laboratory, M T or Th F 2-4:30, or W 2-4:30 and Th 10-12:30. Mr. NICHOLS and assistants.

The analysis of gaseous and solid fuels, and gas evolution methods. The application of instrumental methods to quantitative analysis including nephelometric, refractometric, colorimetric, electrolytic, combustion, conductometric, and potentiometric methods.

[250. *GAS AND FUEL ANALYSIS*. Fall term. Credit three hours. Prerequisite, Chemistry 220 and 222, or consent of the instructor. Mr. NICHOLS and assistants. Not offered in 1949-1950.]

265. *ADVANCED QUANTITATIVE LABORATORY*. Spring term. Credit three hours. Prerequisite, Chemistry 215 or 220 and 222. Conferences, one hour a week, to be arranged. Laboratory, M T W Th or F 2-4:30. Students should register for a combination of laboratory periods that will total seven and one-half hours a week. Mr. NICHOLS and assistants.

Laboratory practice in the application of special methods of quantitative analysis and the analysis of special materials.

275. *QUANTITATIVE MICROANALYSIS*. Fall term. Credit three or more hours. Prerequisite, consent of the instructor. Primarily for graduate students. Enrollment is limited. Laboratory, W F 9-5. Mr. NICHOLS and assistant.

Laboratory practice in typical methods of both organic and inorganic quantitative microanalysis.

[280. *EMISSION SPECTROSCOPY IN CHEMICAL ANALYSIS*. Either term. Credit three hours. Prerequisite, consent of the instructor. Primarily for seniors and graduate students. Conference, one hour a week, to be arranged. Laboratory, hours to be arranged. Mr. PAPISH and assistant. Not offered in 1949-1950.]

[285. *SPECTROCHEMICAL ANALYSIS*. Either term. Credit two or more hours. Prerequisite, Chemistry 280. Laboratory, hours to be arranged. Mr. PAPISH and assistant. Not offered in 1949-1950.]

[290. *ADVANCED QUANTITATIVE ANALYSIS*. Spring term. Credit two hours. Prerequisite, Chemistry 403, or 407. Primarily for graduate students. Lectures, two hours a week to be arranged. Mr. NICHOLS.

A discussion of selected topics in quantitative analysis, and the development and present status of various analytical methods. Given in alternate years. Not offered in 1949-1950.]

ORGANIC CHEMISTRY

301. *INTRODUCTION TO ORGANIC CHEMISTRY*. Fall term. Credit two hours. Prerequisite, Chemistry 105-106. For students in Engineering. Lectures, Th S 11. Mr. BLOMQUIST.

A brief survey of the principal classes of organic compounds, their industrial sources, manufacture, and utilization.

303. *ELEMENTARY ORGANIC CHEMISTRY*. Either term. Credit four hours. Prerequisite, Chemistry 105-106. Chemistry 201 is desirable but not required. Chemistry 305 must be taken with Chemistry 303. Primarily for students in the premedical and biological curricula. Lectures, M W F S 11. Mr. CAIN.

A study of aliphatic and aromatic organic compounds, their occurrence, relations, and uses.

The student should determine the entrance requirement in organic chemistry for the particular medical school he wishes to enter. Students may obtain six hours credit by taking Chemistry 303 and 305. An additional two hours credit in laboratory may be obtained by taking Chemistry 306. For those students desiring a longer course, Chemistry 307-308 (six hours) and Chemistry 311 (three hours) are recommended.

305. *ELEMENTARY ORGANIC LABORATORY*. Either term. Credit two hours. Must be taken with Chemistry 303. Laboratory, M W or T Th 2-4:30. Mr. CAIN and assistants.

Laboratory experiments on the preparation and reactions of typical aliphatic and aromatic organic compounds.

306. *ORGANIC LABORATORY*. Spring term. Credit two hours. Prerequisite, Chemistry 303 and 305. Laboratory, M W 2-4:30. Mr. CAIN and assistants.

A continuation of Chemistry 305.

307-308. *INTRODUCTORY ORGANIC CHEMISTRY*. Throughout the year. Credit three hours a term. Prerequisite, Chemistry 201, 205 and 207, or 212. Chemistry 215 or 220 and 222 is desirable but not required. Chemistry 307 is prerequisite to Chemistry 308. Chemistry 311 must be taken with Chemistry 307. Required of candidates for the degrees of B. Chem. Eng. and A.B. with a major in Chemistry, and recommended for pre-medical students who desire the longer course. Lectures, M W F 9. Mr. BLOMQUIST and Mr. JOHNSON.

A study of the more important compounds of carbon, their occurrence, methods of preparation, relations, and uses.

311. *INTRODUCTORY ORGANIC LABORATORY*. Fall term. Credit three hours. Must be taken with Chemistry 307. Required of candidates for the degrees of B. Chem. Eng. and A.B. with a major in chemistry, and recommended for pre-medical students who desire the longer course. (See Chemistry 303 and 305.) Laboratory, T Th 9-12:30, T Th 1-4:30, or F 1-4:30 and S 9-12:30. Mr. DETAR and assistants.

The student prepares typical compounds of carbon and familiarized himself with their properties, reactions, and relations.

312. *INTERMEDIATE ORGANIC LABORATORY*. Spring term. Credit three hours. Prerequisite, Chemistry 311, parallel course Chemistry 308. Required of candidates for the degree of B. Chem. Eng., and recommended for candidates for the degree of A.B. with a major in Chemistry and pre-medical students who desire the longer course. (See Chemistry 303 and 305). Laboratory, T Th 9-12:30, T Th 1-4:30, or F 1-4:30 and S 9-12:30. Mr. DETAR, Mr. MILLER, and assistants.

A continuation of Chemistry 311.

320. *IDENTIFICATION OF ORGANIC COMPOUNDS*. Either term. Credit four hours. Prerequisite, Chemistry 307-308 and 311-312, at grades of 75 or better. Primarily for students completing advanced work in organic chemistry or related fields. Lectures, T Th 8. Laboratory, T Th 2-4:30, or F 2-4:30 and S 10-12:30. Mr. MILLER and assistants.

The classification reactions of organic compounds and the preparation of solid derivatives are applied to the identification of unknown organic substances.

330. *ADVANCED ORGANIC LABORATORY*. Either term. Credit two to four hours. Prerequisite, Chemistry 312 and 320, and consent of the instructor. Primarily for seniors and graduate students as preparation for advanced and independent work.

Enrollment limited for undergraduates to those having a record of 80 or better in prerequisite courses. Laboratory, hours to be arranged. Messrs. BLOMQUIST, CAIN, DeTAR, JOHNSON, and MILLER.

An advanced course in organic synthetic procedures, involving preparation of intermediates for organic research and use of standard reference works.

365-366. *ADVANCED ORGANIC CHEMISTRY*. Throughout the year. Credit two hours a term. Prerequisite, Chemistry 307-308, 311-312 and 320, or consent of the instructor. Primarily for seniors and graduate students intending to do advanced work in organic chemistry or related fields. Enrollment limited for undergraduates to those having a record of 80 or better in prerequisite courses. Students may register for either term separately. Lectures, T Th 9. Messrs. BLOMQUIST, DeTAR, and JOHNSON.

Fall term: survey of the more important classes of organic compounds and their reactions. Spring term: discussion of general topics (tautomerism, molecular rearrangements, stereochemistry).

375-376. *SELECTED TOPICS IN ORGANIC CHEMISTRY*. Throughout the year. Credit two hours a term. Prerequisite, Chemistry 365-366. Primarily for graduate students. Open to undergraduates only with the consent of the instructor. Students may register for either term separately. Lectures, M W 12. Mr. BLOMQUIST.

Fall term: organic compounds of nitrogen and sulfur. Spring term: the simpler heterocycles and alicyclic compounds. Given in alternate years.

[380. *ORGANIC CHEMISTRY OF HIGH POLYMERS*. Fall term. Credit two hours. Prerequisite, Chemistry 365-366, or consent of the instructor. Primarily for graduate students. Lectures, M W 11. Mr. MILLER.

The mechanism of polymerization processes and the chemical structure and properties of high polymers will be discussed, with examples chosen from the more significant natural and synthetic high molecular weight materials. Given in alternate years. Not offered in 1949-1950.]

385. *PHYSICAL ASPECTS OF ORGANIC CHEMISTRY*. Fall term. Credit two hours. Prerequisite, Chemistry 320 or 365-366, and consent of the instructor. Primarily for graduate students. Lectures, M W 11. Mr. MILLER.

A discussion of recent theoretical developments in organic chemistry and their application to typical reactions. Given in alternate years.

[395-396. *CHEMISTRY OF NATURAL PRODUCTS*. Throughout the year. Credit two hours a term. Prerequisite, Chemistry 320 or 365-366. Primarily for graduate students. Open to undergraduates by consent of the instructor. Students may register for either term separately. Lectures, T Th 11. Mr. CAIN.

A discussion of the organic chemistry of natural products. Fall term; terpenes, vitamin A, quinones, plant pigments, antibiotics, and alkaloids. Spring term: amino acids, proteins, carbohydrates, vitamin C, the vitamin B group, and steroids. Given in alternate years. Not offered in 1949-1950.]

PHYSICAL CHEMISTRY

402. *INTRODUCTION TO PHYSICAL CHEMISTRY*. Spring term. Credit two hours. Prerequisite, Chemistry 301, Mathematics 156 or 163, and Physics 117. For students in Engineering. Lectures, Th S 11. Mr. LONG.

A brief survey of Physical Chemistry with emphasis on topics of interest to students in Engineering.

403-404. *INTRODUCTORY PHYSICAL CHEMISTRY*. Throughout the year. Credit three hours a term. Prerequisite, Chemistry 215 or 220 and 222, 307-308, Mathematics 161-162-163, and Physics 107 and 108 (or their substantial equivalent). Chemistry 403 is prerequisite to 404. Required of candidates for the degree of B. Chem. Eng. Lectures, M W F 9. Mr. BRIGGS.

A systematic presentation of the principles of physical chemistry. The topics include: the properties of gases, liquids, and solids; physical and chemical equilibrium in homogeneous and heterogeneous systems; the mass law, theorem of Le Chatelier, and the phase rule; thermochemistry and elementary thermodynamics; the theory of solutions; ionic equilibria; chemical kinetics; problems in physical chemistry.

405-406. *ELEMENTARY PHYSICAL CHEMISTRY*. Throughout the year. Credit: Chemistry 405 three hours; Chemistry 406 two hours. Prerequisite, Chemistry 303 and 305 and Mathematics 153-154. Chemistry 405 is prerequisite to Chemistry 406. Open only to students in the biological sciences. Lectures, fall term, T Th S 12; spring term, T Th 12. Mr. BRAGG.

A survey of the principles of elementary physical chemistry, including an introduction to colloid chemistry and electrochemistry.

407-408. *INTRODUCTORY PHYSICAL CHEMISTRY*. Throughout the year. Credit three hours a term. Prerequisite, Chemistry 215 or 220 and 222, 307-308, which may be taken concurrently; Mathematics 171-172-173, or their equivalent; Physics 103 and 104, or 107 and 108. Chemistry 407 is prerequisite to Chemistry 408. Required of candidates for the degree of A.B. with a major in chemistry, and open to other qualified students by consent of the instructor. Lectures, M W F 10. Mr. HOARD.

A study of the more fundamental principles of physical chemistry from the standpoint of the laws of thermodynamics, and of the kinetic theory. A unified treatment of the properties of matter, thermochemistry, the properties of solutions, and of equilibrium in homogeneous and heterogeneous systems. Chemical kinetics and catalysis are included.

411-412. *INTRODUCTORY PHYSICAL LABORATORY*. Throughout the year. Credit three hours a term. Prerequisite or parallel course, Chemistry 403-404, or 407-408. Students may register for either term separately. Enrollment may be limited. Laboratory, M T or Th F 2-4:30, or S 8-1. Mr. BRIGGS, Mr. HOARD, Mr. MUSCHLITZ, and assistants.

Qualitative and quantitative experiments illustrating the principles of physical chemistry, and practice in performing typical physico-chemical measurements.

[431-432. *APPLIED ELECTROCHEMISTRY*. Throughout the year. Credit two hours a term. Prerequisite, Chemistry 403-404, or 407-408. Chemistry 431 is prerequisite to Chemistry 432. Lectures, T Th 11. Mr. BRIGGS.

Elementary theory of electrolysis and electromotive force. Electrolytic refining and extraction of metals; electroplating; electrolytic preparation of organic and inorganic compounds; electrothermal electrolysis; storage cells.

By electing Chemistry 465 (two or more hours), the student may obtain laboratory practice in many of the subjects which are presented in the lectures. Given in alternate years. Not offered in 1949-1950.]

[435. *INTRODUCTORY ELECTROCHEMISTRY*. Spring term. Credit three hours. Prerequisite, Chemistry 403-404, or 407-408. Lectures, M W 12. Laboratory, one period a week to be arranged. Mr. BRIGGS and assistant.

The theory of electrolysis and the voltaic cell. Laboratory practice in electrolysis, measurement of electromotive forces, transference numbers, decomposition voltages, and similar subjects. Not offered in 1949-1950.]

440. *COLLOID CHEMISTRY*. Spring term. Credit three hours. Prerequisite, Chemistry 403-404, or 407-408. Lectures, M W F 12. Mr. BRIGGS.

The general theory of colloid chemistry and adsorption. Applications of the theory, with emphasis on emulsions and the inorganic colloids.

445. *APPLICATION OF THE PHASE RULE*. Fall term. Credit three hours. Prerequisite, Chemistry 403-404, or 407-408. Lectures, M W F 12. Mr. BRIGGS.

A study of phase equilibria in two-component, three-component, and four-component systems. Interpretation of phase diagrams, equilibria in saturated salt solutions, indirect analysis, and paths of crystallization.

[450. *SOLID STATE*. Spring term. Credit three hours. Prerequisite, Chemistry 403-404, or 407-408. Lectures, hours to be arranged. Mr. HOARD.

Discussion of structural types established for crystals through x-ray analysis, ionic and atomic radii, coordination number, packing relations, and stereochemistry of molecules and complex ions. Correlation of structure with physical properties, especially for ionic and metallic crystals. Not offered in 1949-1950.]

455. *KINETICS OF CHEMICAL REACTIONS*. Spring term. Credit three hours. Prerequisite, Chemistry 403-404, or 407-408. Primarily for graduate students. Open to undergraduates by consent of the instructor. Lectures, M W F 11. Mr. LONG.

A general discussion of rates of reaction including: types of reactions, methods of measurement, theories of reaction rates, application to problems.

[460. *CHEMICAL PHYSICS*. Fall term. Credit three hours. Primarily for seniors and graduate students majoring in Chemistry and Physics. Lectures, M W F 10. Mr. DEBYE.

An elementary presentation of the principles involved in describing the structure and behavior of matter; atomic structure and the periodic table; inter-atomic forces; structure of solids; electrons in metals; temperature equilibrium, and statistics. Not offered in 1949-1950.]

461. *RADIOCHEMISTRY*. Fall term. Credit three hours. Prerequisite, Chemistry 403-404, or 407-408. Primarily for graduate students. Lectures, M W F 12. Mr. MILLER.

A discussion of properties of the nucleus; spontaneous and induced nuclear reactions; radioactivity measurement; applications of radioisotopes; chemical techniques in the investigation of nuclear phenomena; and chemistry of radioactive elements.

465. *ADVANCED LABORATORY PRACTICE IN PHYSICAL CHEMISTRY*. Either term. Credit two to six hours. Prerequisite, consent of the instructor. Hour and place to be arranged. Messrs. BAUER, BRIGGS, HOARD, LONG, and MUSCHLITZ.

471-472. *THERMODYNAMICS*. Throughout the year. Credit three hours a term. Prerequisite, Chemistry 403-404, or 407-408. Chemistry 471 is prerequisite to Chemistry 472. Primarily for graduate students. Lectures, M W F 9. Mr. HOARD.

Development of the general equations of thermodynamics from the first and second laws. Applications to the study of physico-chemical equilibria in gases, liquids, solids, and liquid solutions. Problems.

[475. *THEORY OF SOLUTIONS*. Fall term. Credit three hours. Prerequisite, Chemistry 471-472. Primarily for graduate students. Mr. HOARD.

Not offered in 1949-1950.]

[480. *STATISTICAL MECHANICS*. Fall term. Credit three hours. Prerequisite, Chemistry 491 or equivalent is desirable but not required. Primarily for graduate students. Lectures, M W F 12. Mr. BRAGG.

An introduction to quantum statistical mechanics with applications to chemistry. Given in alternate years.

[482. *PHYSICAL CHEMISTRY OF HIGH POLYMERS*. Spring term. Credit two hours. Prerequisite, Chemistry 380, 471-472, or consent of the instructor. Primarily for graduate students. Lectures, M W 11. Mr. FLORY. Given in alternate years. Not offered in 1949-1950.]

[491. *INTRODUCTION TO QUANTUM MECHANICS*. Fall term. Credit three hours. Prerequisite, consent of the instructor. Primarily for graduate students. Lectures, M W F 9. Mr. BRAGG. Given in alternate years. Not offered in 1949-1950.]

[492. *QUANTUM CHEMISTRY*. Spring term. Credit three hours. Prerequisite, Chemistry 491 or its equivalent. Primarily for graduate students. Lectures, M W F 9. Mr. BRAGG. Given in alternate years. Not offered in 1949-1950.]

495. *MOLECULAR SPECTRA*. Either term. Credit three hours. Prerequisite, consent of the instructor. Primarily for graduate students majoring in Physical Chemistry and Physics. Hours to be arranged. Given upon registration of five or more students. Mr. BAUER.

Description of various types of molecular spectra. The rotational and vibrational spectra of polyatomic molecules (energy levels, normal coordinate treatment, selection rules). Relations between molecular structure and molecular constants.

THE CLASSICS

Mr. JAMES HUTTON, *Chairman*; Messrs. EDWARD L. BASSETT, HARRY CAPLAN, GORDON M. KIRKWOOD, FRIEDRICH SOLMSEN, FREDERICK O. WAAGE.

Those whose major study is in the Classics must complete twenty hours of advanced courses in the Department (Greek courses above 201 or Latin courses above 206), and fifteen hours, selected after conference with the adviser, in related subjects. Related subjects for this purpose are Ancient History, modern foreign languages and literatures, particularly French and German, Ancient Philosophy, Fine Arts 301, 312, 315, and courses 201-202, 214, and 401 in the Division of Literature.

Those whose major study is in Classical Civilization must complete (a) eighteen hours in Latin or Greek; (b) Classics 401, course 201-202 in the Division of Literature, and nine further hours selected from the courses listed below under Classical Civilization; and (c) fifteen hours in related subjects. Related subjects for this purpose may be any courses in the Humanities, but selected in conference with the adviser so as to form a coherent and significant experience in the relation between antiquity and subsequent periods in the Western tradition; they may include courses listed under Classical Civilization which have not been used to satisfy requirement (b).

Students wishing to qualify for the degree of Bachelor of Arts with Honors in Classics should consult some member of the Department before pre-registering for the junior year.

GREEK

101. *GREEK FOR BEGINNERS*. Either term. Credit three hours. M W F 12. Mr. CAPLAN.

Introduction to Homer's *Iliad*.

103. *HOMER'S ILIAD*. Either term. Credit three hours. Prerequisite, Greek 101. M W F 12. Fall term, Mr. HUTTON; Spring term, Mr. KIRKWOOD. Continuation of Greek 101.

201. *ATTIC GREEK*. Either term. Credit three hours. Prerequisite, Greek 103. M W F 9. Fall term, Mr. SOLMSEN; Spring term, Mr. BASSETT.

Xenophon, *Anabasis*; Plato, *Selected Dialogues*.

203. *EURIPIDES, IPHIGENIA IN TAURIS, AND ALCESTIS; NEW TESTAMENT SELECTIONS*. Either term. Credit three hours. Prerequisite, Greek 201. M W F 9. Fall term, Mr. KIRKWOOD; Spring term, Mr. SOLMSEN.

209-210. *GREEK COMPOSITION*. Throughout the year. Credit one hour a term. Prerequisite, Greek 103, or the equivalent. T 2. Mr. KIRKWOOD.

301-302. *ARISTOPHANES, CLOUDS; SOPHOCLES, OEDIPUS REX; HERODOTUS*. Throughout the year. Credit three hours a term. Prerequisite, Greek 203. T Th S 10. Mr. ———.

305-306. *LYRIC POETRY; AESCHYLUS, PROMETHEUS BOUND; THEOCRITUS; DEMOSTHENES, PHILIPPIC ORATIONS*. Throughout the year. Credit three hours a term. Prerequisite, Greek 301-302. T Th S 10. Mr. ———.

309-310. *ADVANCED GREEK COMPOSITION*. Throughout the year. Credit one hour a term. Prerequisite, Greek 209-210, or the equivalent. W 2. Mr. KIRKWOOD.

389. *GREEK DIALECTS*. Fall term. Credit two hours. For graduate students. T Th 12. Mr. BASSETT.

[395. *SEMINAR*. Throughout the year. Credit three hours a term. For graduate students. Not offered in 1949-1950.]

LATIN

105-106. *LATIN FOR BEGINNERS*. Throughout the year. Credit three hours a term. M W F 12. Mr. BASSETT.

107. *FRESHMAN COURSE: SELECTIONS FROM CICERO AND VIRGIL*. Fall term. Credit three hours. Prerequisite, Latin 106 or two units of entrance Latin. M W F 9. Mr. HUTTON.

Designed to meet the needs of students who have had two years of Latin in school. For the sake of those whose study of Latin has been interrupted, a considerable amount of review will be included in the course. For the second term of Latin 107 see Latin 110.

109. *FRESHMAN COURSE: VIRGIL AND OVID*. Fall term. Credit three hours. For students offering three units of entrance Latin. M W F 11. Mr. BASSETT.

For the second term of this course see Latin 110.

110. *FRESHMAN COURSE: HORACE, ODES AND EPODES*. Spring term. Credit three hours. Prerequisite, Latin 107 or 109. M W F 11. Mr. SOLMSEN.

111-112. *FRESHMAN COURSE*. Throughout the year. Credit three hours a term. For students offering four units of entrance Latin. M W F 11. Mr. CAPLAN.

Cicero, *De Senectute*; Martial, *Epigrams*; Horace, *Odes* and *Epodes*.

[115-116. *LATIN LANGUAGE REVIEW*. Throughout the year. Credit one hour a term. For freshmen. Not offered in 1949-1950.]

205-206. *TERENCE, ANDRIA; CATULLUS; HORACE, SATIRES AND EPISTLES; VIRGIL, GEORGICS; LIVY*. Throughout the year. Credit three hours a term. Prerequisite, Latin 109-110, or 111-112. M W F 11. Fall term, Mr. SOLMSEN; Spring term, Mr. HUTTON.

[215. *REMAINS OF EARLY LATIN*. Fall term. Credit two hours. Prerequisite or parallel course, Latin 205-206, or 317-318. Not offered in 1949-1950.]

216. *VIRGIL, AENEID, BOOKS VII-XII*. Spring term. Credit two hours. Prerequisite or parallel course, Latin 205-206, or 317-318. T Th 11. Mr. BASSETT.

221-222. *LATIN COMPOSITION*. Throughout the year. Credit one hour a term. Prerequisite, Latin 109-110, or 111-112. M 2. Spring term, Mr. BASSETT.

[315-316. *THE GREATER REPUBLICAN WRITERS: PLAUTUS, CICERO, LUCRETIUS*. Throughout the year. Credit three hours a term. Prerequisite, Latin 205-206. Not offered in 1949-1950.]

317-318. *LITERATURE OF THE EARLY EMPIRE: TACITUS, ANNALS; JUVENAL; PLINY'S LETTERS; SENECA'S LETTERS*. Throughout the year. Credit three hours a term. Prerequisite, Latin 205-206. T Th S 9. Fall term, Mr. BASSETT; Spring term, Mr. KIRKWOOD.

321-322. *LATIN COMPOSITION; ADVANCED COURSE*. Throughout the year. Credit one hour a term. For undergraduates who have completed Latin 221-222, and for graduate students. Th 2. Fall term, Mr. BASSETT; Spring term, Mr. SOLMSEN.

[347. *HISTORY OF THE LATIN LANGUAGE*. Credit two hours. For upperclassmen and graduate students. Not offered in 1949-1950.]

[348. *VULGAR LATIN: PETRONIUS, CENA TRIMALCHIONIS; VULGAR LATIN INSCRIPTIONS*. Credit two hours. Not offered in 1949-1950.]

[350. *COMPARATIVE GRAMMAR OF GREEK AND LATIN*. Credit two hours. For upperclassmen and graduate students. Not offered in 1949-1950.]

369. *MEDIEVAL LATIN LITERATURE*. Spring term. Credit three hours. Prerequisite, three years of High School Latin or the equivalent. M W F 9. Mr. CAPLAN.

381-382. *SEMINAR: HORACE*. Throughout the year. Credit three hours a term. For graduate students. Library, Classical Seminar Room. M 2-4. Mr. ———.

390. *ITALIC DIALECTS*. Spring term. Credit two hours. For graduate students. T Th 12. Mr. BASSETT.

CLASSICAL CIVILIZATION

401. *FOUNDATIONS OF WESTERN THOUGHT*. Fall term. Credit three hours. Open to sophomores and upperclassmen. M W F 10. Mr. SOLMSEN.

A study of the beliefs and ideas—religious, moral, social, and scientific—which were current or advanced in the Greek, Roman, and Early Christian period of

Western Civilization; the history and transformation of these ideas and their integration into coherent bodies of thought. Popular thought and practices as well as the ideas of leading thinkers and poets will be considered. Reading of representative material in translation. Two hours will be given to lectures, one hour to discussion of the ideas treated. Attention will be given to their influence on later thought and their relevance to present-day problems.

ENGLISH TRANSLATIONS OF GREEK AND LATIN CLASSICS. (See Literature 201-202.)

HUMANISM AND THE RENAISSANCE. (See Literature 214.)

PRINCIPLES OF LITERARY CRITICISM. (See Literature 401-402.)

ANCIENT HISTORY. (See History 101, 102.)

GREEK HISTORY. (See History 211.)

THE HELLENISTIC AGE. (See History 212.)

THE ROMAN REPUBLIC. (See History 213.)

HISTORY OF PAINTING AND SCULPTURE. (See Fine Arts 101.)

HISTORY OF GREEK SCULPTURE. (See Fine Arts 301.)

ART OF THE ROMAN EMPIRE. (See Fine Arts 302.)

[NUMISMATICS. ANCIENT COINAGE. (See Fine Arts 315.) Not offered in 1949-1950.]

HISTORY OF PHILOSOPHY. (See Philosophy 301.)

HISTORY OF POLITICAL THEORY. (See Philosophy 325.)

PLATO AND ARISTOTLE. (See Philosophy 575-576.)

ECONOMICS

Mr. G. P. ADAMS, JR., *Chairman*; Messrs. M. G. CLARK, M. A. COPELAND, DONALD ENGLISH, J. G. B. HUTCHINS, A. E. KAHN, M. S. KENDRICK, R. E. MONTGOMERY, J. E. MORTON, P. M. O'LEARY, H. L. REED, E. P. REUBENS, D. G. TYNDALL.

For a major in Economics the following courses must be completed: (1) Economics, 101, or 105 and 106, or the equivalent; and twenty-four hours of advanced courses, including Economics 901; (2) in related subjects, fifteen hours in not more than three of the following Departments: Far Eastern Studies 201-202, Geology 105 and 107-108, Government, History, Mathematics, Philosophy, Psychology, and Sociology. Approved courses in the field of Statistics may also be counted in satisfaction of the requirement in related subjects.

No course may be offered as a related subject which is counted in satisfaction of the distribution requirements (i. e., prescribed subjects).

Students who intend to register in Arts and Sciences and in the School of Business and Public Administration or in the Law School will be required to complete fifteen hours of advanced courses in Economics, including Economics 901, and six hours of related courses.

Students whose work in the College and particularly in the courses comprising their major has been of high quality may be permitted to enroll in Informal Study in Economics (090) in their senior year.

Candidates for Honors in Economics will be required to pass a special examination and should consult their advisers before the beginning of their senior year.

101. *MODERN ECONOMIC SOCIETY.* Either term. Credit five hours. Not open to first-term freshmen. Freshmen in their second term will be admitted by permission. M T W Th F 8, 10, 11, 12, or 1.

A survey of the existing economic order, its more salient and basic characteristics, and its operations.

105. *MODERN ECONOMIC SOCIETY*. Fall term. Credit three hours. Open to a limited number of freshmen. M W F 8, 12, 1, 2, or 3; T Th S 8.

This course and course 106 cover the same subject matter as Economics 101.

106. *MODERN ECONOMIC SOCIETY*. Spring term. Credit three hours. Continuation of Economics 105. M W F 8, 12, 1, 2, or 3; T Th S 8.

107. *INTRODUCTION TO ECONOMICS*. Either term. For students in Engineering. Credit three hours. Hours to be arranged.

An introduction to the more essential economic features of contemporary American Society.

MONEY, BANKING, AND TRADE FLUCTUATIONS

[201. *MONEY AND BANKING*. Either term. Credit three hours. Prerequisite, Economics 101 or 106. Not to be counted for major credit and not offered for majors in economics. M W F 12. Mr. KAHN. Not offered in 1949-1950.]

203. *MONEY, CURRENCY, AND BANKING*. Either term. Credit three hours. Prerequisite, Economics 101 or 106. Fall term, M W F 9; spring term, M W F 11. Mr. REED.

A study of our currency system and banking processes for the primary purpose of training the student to determine the influence of monetary factors in economic problems.

204. *MONEY, CURRENCY, AND BANKING*. Either term. Credit three hours. Prerequisite, Economics 201 or 203. Fall term, M W F 11; spring term, M W F 9. Mr. REED.

A continuation of Economics 203.

210. *COMMERCIAL BANKING*. Spring term. Credit three hours. Prerequisite, Economics 204 which may be taken concurrently. T Th S 9. Mr. REED.

Selected case problems will be studied for the purpose of gaining an understanding of the principles of bank administration.

220. *TRADE FLUCTUATIONS*. Fall term. Credit three hours. Prerequisite, Economics 203. T Th S 9. Mr. REED.

A study of the causes and effects of trade recessions and revivals, with an introduction to the methods of business forecasting. There will be intermittent discussions of current economic trends.

224. *THE SYSTEM OF MONEY FLOWS IN THE UNITED STATES*. Fall term. Credit three hours. Prerequisite, Economics 902. T Th S 11. Mr. COPELAND.

An analysis and interpretation of the money flows accounts that have recently become available for the various sectors of the economy. Special attention will be given to the kinds of discretion exercised over money flows by industrial corporations, the federal government, banks, households, etc., and to the significance of the money flows accounts for monetary theory.

231. *FINANCIAL HISTORY OF THE UNITED STATES*. Fall term. Credit three hours. Prerequisite, Economics 204. T Th S 10. Mr. O'LEARY.

A study of developing financial institutions, problems and legislation from 1775 to 1935. Monetary, banking, and public finance will be dealt with against the changing

background of American economic organizations. Special attention will be given to the impact of the Great Depression and the New Deal upon American finances. Library readings and reports.

ACCOUNTING AND STATISTICS

301. *ACCOUNTING*. Either term. Credit three hours. Prerequisite, Economics 101, or 106. Fall term, T Th S 9; spring term, T Th S 10. One practice period, T 2-4, or W 2-4. Mr. ENGLISH.

Theory of debit and credit; the journal and ledger; the development of books of original entry; preparation of income statements and balance sheets.

302. *ACCOUNTING*. Either term. Credit three hours. Prerequisite, Economics 301. Fall term, T Th S 10, spring term, T Th S 9. One practice period, Th or F 2-4. Mr. ENGLISH.

Capital stock accounts; bonds and their valuation; amortization, reserves and reserve funds, analysis of income statements and balance sheets.

ADVANCED ACCOUNTING. (B. and P.A. 112). Fall term. Credit three hours. Prerequisite, Economics 302. Limited to seniors who have the consent of the instructor. T Th S 10. Mr. SHANNON.

Problems of income determination and allocation; the admission, valuation, and presentation of typical asset and equity elements in a balance sheet, and the related revenue and expense aspects; analysis and interpretation of financial statements according to varying philosophies; special topics—sinking funds, special reserves, and operating schedules.

ADVANCED ACCOUNTING (B. and P. A. 113) Spring term. Credit three hours. Limited to seniors who have the consent of the instructor. T Th S 10. Mr. SHANNON.

A continuation of Economics 305. Analysis of installment sales and long-term contracts; consignments; branch accounting; consolidated statements; foreign exchange; reorganization and liquidation problems; estate and trust accounting; insurance, source and application of funds statement and related analysis of financial statements.

STATISTICS. (I. and L.R. 40). Either term. Credit three hours. Two lectures and one two-hour laboratory. Hours to be arranged. Mr. McCARTHY.

An introduction to basic concepts and uses of descriptive statistics, and problems of drawing valid inferences from statistical data. Specific topics included are: classification, averages, dispersion, correlation, probability, tests of significance, confidence intervals.

ECONOMIC STATISTICS. (I. and L.R. 41). Spring term. Credit three hours. Prerequisite, I. and L.R. 40 or equivalent. Two lectures and one two-hour laboratory. Hours to be arranged. Mr. MORTON.

Application of statistical techniques to economic data, with particular emphasis on the analysis of index numbers, time series, income distributions, etc.

For additional courses in statistics, see page (117).

ORGANIZATION AND CONTROL OF INDUSTRY

311. *CORPORATION FINANCE*. Either term. Credit three hours. Prerequisite, Economics 301, or its equivalent. Fall term, T Th S 9; spring term, T Th S 9. Mr. TYNDALL.

A study of the financial practices of business corporations in the United States; types of corporate securities; sources of capital funds; determination and administration of corporate incomes; financial difficulties and corporate reorganizations; the relation of corporate practices to the functioning of the American economic system; and the regulatory activities of the Securities and Exchange Commission.

321. *PRIVATE ENTERPRISE AND PUBLIC POLICY*. Fall term. Credit three hours. Prerequisite, Economics 101 or 106. M W F 9. Mr. KAHN.

The role of competition, monopoly, and public policy in various politico-economic philosophies, and, specifically, in a private enterprise economy. A study and evaluation of the American system of business organization, its price and production policies, and public policies of implementation and regulation.

322. *PUBLIC REGULATION OF BUSINESS*. Spring term. Credit three hours. Prerequisite, Economics 321 or consent of the instructor. M W F 9. Mr. KAHN.

A continuation of Economics 321, with special reference to recent developments in public control, and continuing investigations of specific current problems of public policy.

TRANSPORTATION. (B. and P.A. 180). Fall term. Credit three hours. Limited to seniors who have taken Economics 101, or the equivalent. M W F 10. Mr. HUTCHINS.

A study of American transportation from the points of view of operators, shippers, and public authorities. Attention is given to the national traffic pattern; railway operations, rates, finance, and control; motor carriers. Lectures and cases.

TRANSPORTATION. (B. and P.A. 181). Spring term. Credit three hours. Limited to seniors who have taken B. and P.A. 180. M W F 10. Mr. HUTCHINS.

A continuation of B. and P.A. 180. The subjects covered include: inland water transport, ocean shipping, air transport, and national transportation policy.

LABOR ECONOMICS

401. *LABOR CONDITIONS AND PROBLEMS*. Fall term. Credit three hours. Prerequisite, Economics 101, or the equivalent. M W F 10. Mr. MONTGOMERY.

An introduction to the field of Labor Economics and a survey of the more basic labor problems growing out of modern economic arrangements.

402. *TRADE UNIONISM AND COLLECTIVE BARGAINING*. Spring term. Credit three hours. Prerequisite, Economics 401, or consent of the instructor. M W F 10. Mr. MONTGOMERY.

A study of the origins, philosophic basis, aims, and policies of trade unions, of the economic implications of trade unionism in modern economic life, and of collective bargaining in selected industries.

410. *LEGAL AND CONSTITUTIONAL ASPECTS OF LABOR PROBLEMS*. Spring term. Credit two hours. Consult the instructor before registering. T 2-4. Mr. MONTGOMERY.

A study of the legal aspects of trade union objectives and methods and an examination of state-labor relationships. Among the topics treated: legal theories underlying labor law; statutory enactments affecting trade unions; injunctions, damage suits, criminal prosecutions, restrictions upon employers; conciliation, arbitration, mediation; and various types of labor legislation.

419. *SPECIAL PROBLEMS IN LABOR ECONOMICS*. Fall term. Credit two hours. Consult the instructor before registering. Th 2-4. Mr. MONTGOMERY.

An undergraduate seminar in some of the problems of labor economics. Topics to be discussed include: collective and individual wage determination, wage-hour and labor-market structure, trends in the economic theory of wages; contemporary collective bargain problems; quantitative measurements of labor phenomena; legal philosophy and labor relations; labor policies of business managements; international aspects of labor problems.

420. *SPECIAL PROBLEMS IN LABOR ECONOMICS*. Spring term. Credit two hours. Consult the instructor before registering. Th 2-4. Mr. MONTGOMERY.

A continuation of Economics 419.

PUBLIC FINANCE

TAXATION. (Agricultural Economics 138). Fall term. Credit three hours. Open to upperclassmen who have taken Economics 101, or the equivalent. M W F 11. Mr. KENDRICK.

A study of the principles and practices of public finance, with emphasis on taxation. Among the topics examined are: growth of public expenditures; the changing pattern of federal, state, and local taxation; the incidence of taxation; and fiscal policy.

502. *FEDERAL PUBLIC FINANCE*. Spring term. Credit three hours. Prerequisite, Taxation (Agricultural Economics 138) or any other introductory course in public finance. M W F 11. Mr. KENDRICK.

An examination of national problems of taxation, expenditures, public debt, and fiscal policy.

[504. *STATE AND LOCAL FINANCE*. Spring term. Credit three hours. Prerequisite, Taxation 138. M W F 11. Mr. KENDRICK. Not offered in 1949-1950.]

ECONOMIC HISTORY

ECONOMIC AND BUSINESS HISTORY, 1750-1860. (B. and P.A. 120). Fall term. Credit three hours. Limited to seniors who have taken Economics 101. T Th S 10. Mr. HUTCHINS.

A study of the evolution of economic structure, business organization and practices, and public economic policies in America and Europe. Analysis of primary economic changes. Case studies of the development of selected enterprises, involving critical analysis of business policy and strategy in relation to contemporary economic conditions.

ECONOMIC AND BUSINESS HISTORY, SINCE 1860. (B. and P.A. 121). Spring term. Credit three hours. Limited to seniors who have taken Economics 101. T Th S 10. Mr. HUTCHINS.

A continuation of B. and P.A. 120, but that course is not a prerequisite.

INTERNATIONAL ECONOMICS

701. *INTERNATIONAL ECONOMICS*. Fall term. Credit three hours. Prerequisite, Economics 101 or 106. T Th S 11. Mr. KAHN.

A study of the economic relations between countries, with emphasis on the problems of constructing a prosperous, progressive world economy. Among the problems discussed are: the theory of international trade and problems of commercial policy;

international finance, balances of payments, foreign exchanges, and monetary policies and problems, past, present, and future.

702. *INTERNATIONAL ECONOMICS*. Spring term. Credit three hours. Prerequisite, Economics 701 or consent of the instructor. T Th S 11. Mr. KAHN.

A continuation of Economics 701.

703. *INTERNATIONAL ECONOMICS*. Fall term. Credit three hours. Hours to be arranged. Mr. KAHN.

A special course for students in the Schools of Law and of Business and Public Administration who are participating in the International Relations programs of those schools. Open, with the consent of the instructor, to a limited number of graduate students who have not had Economics 701-702.

704. *INTERNATIONAL ECONOMICS*. Spring term. Credit three hours. Hours to be arranged. Mr. KAHN.

A continuation of Economics 703.

801. *ECONOMICS OF THE FAR EAST*. Fall term. Credit three hours. Prerequisite, Economics 101 or the equivalent, or consent of the instructor. T Th S 10. Mr. REUBENS.

An analytic study of the economic structure and development of the major Far Eastern countries, emphasizing the process and problems of industrialization, and including postwar problems of reconstruction, the role of the United States and other foreign powers, and the applicability of Western economic theory to Oriental conditions.

802. *ECONOMICS OF THE FAR EAST*. Spring term. Credit three hours. T Th S 10. Mr. REUBENS.

Continuation of Economics 801. Students who have not taken Economics 801 but have adequate preparation in Economics and /or the Far East area will be admitted.

803. *ECONOMICS OF SOVIET RUSSIA*. Fall term. Credit three hours. Prerequisite, Economics 101 or the equivalent, or consent of the instructor. M W F 10. Mr. CLARK.

An analysis of the principles, structure, and performance of the Economy of the Soviet Union, emphasizing the Five-Year Plans. Attention will be given to resources and their allocation, industrialization, agriculture, transportation, fiscal policy, labor, domestic and foreign trade, and problems of war and post-war reconstruction.

804. *ECONOMICS OF SOVIET RUSSIA*. Spring term. Credit three hours. M W F 10. Mr. CLARK.

Continuation of Economics 803. Students who have not taken Economics 803 but have adequate preparation in Economics and/or the Russian area will be admitted.

ECONOMIC THEORY

901. *INTERMEDIATE ECONOMIC THEORY*. Either term. Credit three hours. Not open to sophomores. Required in the junior or senior year of all students majoring in Economics. Prerequisite, Economics 101 or 106. M W F 8, 2. Mr. ADAMS and Mr. TYNDALL.

An analysis of the pricing processes in a free enterprise economy under varying competitive conditions, and their role in the allocation of resources and the functional distribution of the national income.

902. *NATIONAL INCOME AND WEALTH*. Fall term. Credit three hours. Prerequisite, Economics 301 or consent of the instructor. M W F 2. Mr. COPELAND.

A statistical approach to the structure of the American economy, through studies of the size, composition, and distribution of the national income, with applications to the problems of economic planning.

[903. *HISTORY OF ECONOMIC THOUGHT*. Throughout the year. Credit three hours a term. M W F 8. Mr. ADAMS. Not given in 1949-1950.]

910. *ECONOMICS OF DISSENT*. Fall term. Credit two hours. Open to upperclassmen with consent of the instructor. T 2-4. Mr. MONTGOMERY.

A study of the literature of social protest; of unorthodox or dissenting economic doctrines; and of the various types of economic organization that have been proposed or attempted, including the Utopias, Marxian Socialism, Collectivism, Anarchism, the Single Tax, Syndicalism, Guild Socialism, Fabian Socialism, and Communism.

920. *FULL EMPLOYMENT AND FREE ENTERPRISE*. Spring term. Credit three hours. Open to seniors majoring in Economics, and to others with the consent of the instructor. T Th S 11. Mr. COPELAND.

A study of the relations of labor over-demand and of the forms of unemployment to optimum employment and to the system of capitalism and free private enterprise. A critical examination of recent federal policies to promote optimum employment and of various optimum employment plans.

ENGLISH

Mr. F. E. MINEKA, *Chairman*; Messrs. M. H. ABRAMS, H. H. ADAMS, R. C. BALD, J. G. COWLEY, G. F. CRONKHITE, DAVID DAICHES, R. H. ELIAS, E. B. FINCH, F. B. FREEMAN, W. H. FRENCH, W. B. GRAGG, J. W. HALL, BAXTER HATHAWAY, G. H. HEALEY, E. H. HOFER, C. W. JONES, R. M. LADUE, J. G. LINN, E. S. MERTON, FRED MORGAN, H. A. MYERS, DAVID NOVARR, EDWIN NUNGEZER, J. D. OGDEN, H. F. POMMER, Mrs. EUNICE RAIMON, Messrs. MARK ROWAN, W. M. SALE, JR., W. A. SELZ, J. A. SESSIONS, M. W. STEARNS, H. W. THOMPSON, D. D. THORNBURY, C. I. WEIR, A. R. WILLIAMS.

For major work in English the student is required to complete (1) English 111-112, or the equivalent; (2) English 251-252, normally to be taken in the sophomore year; (3) twenty-four hours of other courses in the Department of English or the Division of Literature; and (4) eighteen hours in related subjects.

Courses numbered below 300 are introductory and are intended for underclassmen. All other courses are strictly limited to upperclassmen, except that those who have been excused from any part of English 111-112 may in their fourth term enter one course numbered above 300.

Students excused from English 112 may, in the second term of their freshman year, register in English 201, 203, or 251, or Literature 101, but not in other courses in either department. Such exemptions, however, cannot be made until the student has completed English 111. In later terms, such students may register in any course to which English 111 and 112 are prerequisite.

The twenty-four hours of other courses in the Department of English or the Division of Literature must, with the exceptions listed below, be distributed as follows: twelve hours in "period" courses, six hours in "author" courses, and six hours in "type" courses. The following are classified

as "period" courses: English 305-306, 309-310, 313-314, 317-318, 321-322, 329-330, 376, 403-404, 409-410, Literature 201-202, 211-212. The following are classified as "author" courses: English 365-366, 369-370, 373, 377, 379, 380. The following are classified as "type" courses: English 326, 335, 337, 341-342, 345, 349, 355, 357, 382, 405-406, 407-408, Literature 301-302, 311-312, 401-402, 411, Speech and Drama 455.

Candidates for the degree of Bachelor of Arts with Honors in English are required to take six hours in the Department of English or in the Division of Literature, in addition to the twenty-four described in the preceding paragraph; these six hours may be in creative writing. Seminars in literary and critical problems, open only to honors candidates, are available in the junior and senior years; from these, candidates are to elect twelve of their thirty hours. They should consult Mr. ABRAMS before pre-registering for the junior year.

Students especially interested in writing may, instead of following the distribution outlined in the second paragraph above, distribute their twenty-four hours of courses in English as follows: twelve hours of English 385-386, 388, 389, 485-486, Speech and Drama 461-462; six hours of "period" courses; six hours of either "author" or "type" courses.

Prospective teachers of English in secondary schools must elect a special sequence of required and related courses to satisfy the major requirements. They should consult Mr. THOMPSON, preferably during their second term, before making out their program for the sophomore year.

The eighteen hours in related subjects must be chosen from courses listed in the announcements under Classics, Fine Arts, History, Music, Philosophy, Speech and Drama, and Modern Languages and their Literatures. No course in a modern language taken to satisfy the College proficiency requirement may be counted as a related subject. The student must complete twelve of his hours in related subjects in one department.

111-112. *INTRODUCTORY COURSE IN READING AND WRITING.* Throughout the year. Credit three hours a term. Open to freshmen. English 111 is prerequisite to 112. M W F 8, 9, 10, 11, 12, 2, or 3; T Th S 8, 9, 10, 11, or 12. Mr. SALE and others.

The aim of this course is to increase the student's ability to communicate his own thought and to understand the thought of others.

ENGLISH FOR FOREIGNERS. (See English 101, 102, 103, 201, Division of Modern Languages.)

COURSES FOR SOPHOMORES

201. *PROSE AND COMPOSITION.* Either term. Credit three hours. Prerequisite, English 111 and 112 or the equivalent. Fall term: M W F 8, 9, 10. Spring term: M W F 8, 9, 10. Mr. FRENCH and others.

Exposition with special attention to writing essays and reports; the paragraph; the outline, reading, and analyzing expository prose; frequent practice in writing; personal conferences. Not open to those who have credit for English 203.

202. *PROSE AND COMPOSITION.* Either term. Credit three hours. Prerequisite, English 201 or 203. Fall term: T Th S 9. Spring term: T Th S 9. Mr. SESSIONS.

A continuation of English 201; writing essays and stories; study of recent prose; personal conferences. Not open to those with credit for English 204.

203. *SPECIAL FORMS OF WRITING.* Spring term. Credit three hours. This is a special section of the first term of English 203-204 (see below) scheduled in the Spring term for the convenience of freshmen excused from English 112 and to be elected only by them. T Th 12, and conferences to be arranged. Mr. ———.

203-204. *SPECIAL FORMS OF WRITING*. Throughout the year. Credit three hours a term. First term prerequisite to second. Not open to those taking or having taken English 201-202, but students with credit for 201 may enter 204. M W 12, and conferences to be arranged. Mr. SESSIONS.

Practice in writing verse, narrative, and the personal essay.

221. *INTRODUCTION TO POETRY*. Spring term. Credit three hours. M W F 10. Mr. STEARNS.

Selected English and American poems.

251. *GREAT ENGLISH WRITERS*. Either term. Credit three hours. Fall term: M W F 8, 9, 10, 11, 12, 2, or 3; T Th S 9, 10. Spring term: M W F 9, T Th S 11. Mr. HEALEY and others.

Studies in selected works of great English writers, Chaucer to the eighteenth century.

252. *GREAT ENGLISH WRITERS*. Either term. Credit three hours. Prerequisite, English 251. Fall term: T Th S 11. Spring term: M W F 8, 9, 10, 11, 12, 2, or 3; T Th S 9, 11. Mr. HEALEY and others.

Studies in selected works of great English writers, from the eighteenth century to the present day.

261. *INTRODUCTION TO PROSE FICTION*. Fall term. Credit three hours. M W F 10. Mr. POMMER.

Representative types of the novel and short story.

COURSES FOR UPPERCLASSMEN

ENGLISH TRANSLATIONS OF GREEK AND LATIN CLASSICS. (See Literature 201-202.)

305-306. *OLD ENGLISH PROSE AND POETRY*. Throughout the year. Credit three hours a term. T Th S 11. Mr. FRENCH.

Philology and literature from the Anglo-Saxon invasion to the Norman conquest. Most of *Beowulf* will be read in the second term. This course is recommended by the Department to all who intend to become graduate students in English.

SURVEY OF MEDIEVAL LITERATURE. (See Literature 211-212.)

309-310. *ENGLISH NON-DRAMATIC LITERATURE 1550-1660* (excluding Milton). Throughout the year. Credit three hours a term. T Th S 11. Fall term, Mr. NUNGEZER; Spring term, Mr. MERTON.

Fall term: studies in prose and poetry from More to Bacon. Spring term: prose and poetry from Donne to Marvell.

HUMANISM AND THE RENAISSANCE. (See Literature 214.)

313-314. *ENGLISH LITERATURE 1660-1790*. Throughout the year. Credit three hours a term. T Th S 10. Mr. ABRAMS.

Major prose and poetry from Dryden to Blake; its relations to social and philosophic movements and to contemporary developments in the other arts.

317-318. *THE ROMANTIC PERIOD*. Throughout the year. Credit three hours a term. T Th S 11. Mr. ———.

General literary tendencies and thought of the period. Poetry and prose of Wordsworth, Coleridge, Byron, Shelley, Keats, and others.

321-322. *THE VICTORIAN PERIOD*. Throughout the year. Credit three hours a term. M W F 11. Mr. MINEKA.

Poetry, prose, and drama of the major authors from Carlyle to Shaw, emphasizing the interest of men of letters in reconstruction and reform following the industrial and democratic revolutions.

[326. *MODERN ENGLISH POETRY*. Given every second year. Not given in 1949-1950.]

MODERN MASTERPIECES. (See Literature 316.)

329-330. *AMERICAN LITERATURE*. Throughout the year. Credit three hours a term. M W F 9. Fall term, Mr. THOMPSON; Spring term, Mr. MYERS.

Fall term: Revolution to the Civil War. Spring term: 1865 to the present.

[335. *THE MODERN AMERICAN NOVEL*. Given every second year. Not given in 1949-1950.]

337. *THE MODERN ENGLISH NOVEL*. Spring term. Credit three hours. M W F 10. Mr. SALE.

A critical study of English fiction, beginning with Meredith and Hardy and concluding with selected contemporary novels.

EUROPEAN FICTION. (See Literature 311-312.)

DRAMA AND THE THEATRE. (See Literature 301-302.)

341-342. *ELIZABETHAN AND EARLY STUART DRAMA* (excluding Shakespeare). Throughout the year. Credit three hours a term. M W F 10. Mr. NUNGEZER.

345. *THE DRAMA OF THE RESTORATION AND THE EIGHTEENTH CENTURY*. Fall term. Credit three hours. T Th S 9. Mr. ADAMS.

A study of representative plays from the re-opening of the theatres in 1660 to the time of Sheridan, including Dryden, Wycherley, Etherege, Otway, Congreve, Addison, Steele, Gay, and Goldsmith.

AMERICAN DRAMA AND THEATRE. (See Speech and Drama 455.)

[349. *RECENT AMERICAN POETRY*. Given every second year. Not given in 1949-1950.]

355. *AMERICAN FOLK-LITERATURE*. Credit three hours. M W F 12. Spring term. Mr. THOMPSON.

Backgrounds of American literature and life revealed in traditional tales, ballads, proverbs, games, customs, and place-names. Emphasis upon ballads, and upon methods of collecting and classifying folklore.

[357. *BALLAD AND FOLKTALE*. Not given in 1949-1950.]

365-366. *CHAUCEER AND HIS AGE*. Throughout the year. Credit three hours a term. M W F 12. Mr. FRENCH.

Fall term: Chaucer's life, contemporaries, minor poems, *Troilus and Criseyde*, and Prologue to *The Canterbury Tales*. Spring term: *The Canterbury Tales* and Chaucer's successors in the fifteenth century. May be entered in the spring term.

369-370. *SHAKESPEARE*. Throughout the year. Credit three hours a term. M W F 11. Mr. BALD.

Fall term: comedies. Spring term: tragedies.

373. *MILTON*. Fall term. Credit three hours. T Th S 10. Mr. DAICHES.

A study of Milton's poetry and of selections from his prose.

[376. *AMERICAN COLONIAL LITERATURE*. Given every second year. Not given in 1949-1950.]

[377. *EMERSON, THOREAU, AND WHITMAN*. Given every second year. Not given in 1949-1950.]

379. *POE, HAWTHORNE, AND MELVILLE*. Fall term. Credit three hours. Prerequisite, English 329-330, or consent of the instructor. M W F 2. Mr. THOMPSON.

A critical study of three major American writers with particular emphasis on their achievement of artistic form.

380. *MARK TWAIN, HOWELLS, AND JAMES*. Spring term. Credit three hours. Prerequisite, English 329-30, or consent of instructor. T Th S 9. Mr. ELIAS.

A critical study of three major American writers with special attention to their techniques and their common endeavor to portray the American character.

382. *THE ENGLISH LANGUAGE*. Spring term. Credit three hours. T Th S 10. Mr. FRENCH. (Will not be given in 1950-1951.)

Problems of language: origin, derivation, semantics, usage, and other topics studied historically.

385-386. *NARRATIVE WRITING*. Throughout the year. Credit three hours a term. Prerequisite, consent of the instructor; ordinarily English 202 or 204 will be prerequisite. First term prerequisite to the second. T Th 11 and conferences to be arranged. Mr. HATHAWAY.

The technique of fiction; study of models; criticism of students' stories.

[388. *VERSE WRITING*. Given every second year. Not given in 1949-1950.]

389. *ADVANCED EXPOSITION*. Fall term. Credit three hours. Prerequisite, consent of the instructor; ordinarily English 202 or 204 will be prerequisite. T Th S 9. Mr. HATHAWAY.

English syntax, rhetoric, and the writing of expository prose.

485-486. *SEMINAR IN WRITING*. Throughout the year. Credit three hours a term. Prerequisite, consent of the instructor; ordinarily six hours from courses 385-389 will be prerequisite. First term prerequisite to second. Mr. HATHAWAY.

PLAYWRITING. (See Speech and Drama 461-462.)

PRINCIPLES OF LITERARY CRITICISM. (See Literature 401-402.)

PSYCHOLOGY OF LITERATURE. (See Literature 411.)

MODERN LITERARY CRITICISM. (See Literature 421.)

SEMINARS FOR HONORS STUDENTS

403-404. *APPROACHES TO LITERATURE*. Throughout the year. Credit three hours a term. Seminar open only to candidates for honors in English in their junior year. One meeting a week at a time to be arranged. Mr. ABRAMS.

Ways of viewing literature: historical, biographical, sociological, aesthetic, and as documents in the history of ideas. In 1949-1950, examples for analysis will be chosen from the poetry of Coleridge, Wordsworth, Keats, and Shelley.

405-406. *LITERARY THEORY AND LITERARY PRACTICE*. Throughout the year. Credit three hours a term. Seminar open only to candidates for honors in English in their junior year. One meeting a week at a time to be arranged. Fall term, Mr. FREEMAN; Spring term, Mr. BALD.

In 1949-1950, to be devoted to the critical theory and interpretation of drama. In the fall term, examples for detailed analysis will be drawn from English comedy; in the spring term, from English tragedy.

407-408. *PROBLEMS IN LITERARY HISTORY*. Throughout the year. Credit three hours a term. Seminar open only to candidates for honors in English in their senior year. One meeting a week at a time to be arranged. Fall term, Mr. MYERS; Spring term, Mr. THOMPSON.

In 1949-1950, to be devoted to American literature and civilization. Fall term, the decade 1850-1860; Spring term, the decade 1920-1930.

409-410. *PROBLEMS IN LITERATURE AND THE HISTORY OF IDEAS*. Throughout the year. Credit three hours a term. Seminar open only to candidates for honors in English in their senior year. One meeting a week at a time to be arranged. Fall term, Mr. BALD; Spring term, Mr. DAICHES.

In 1949-1950, to be devoted to the impact of scientific and related ideas and discoveries on the literary imagination. Fall term, the seventeenth century: Bacon, Donne, Browne, Dryden, and the New Philosophy; Spring term, the twentieth century: Yeats, Eliot, Joyce, Huxley, Lawrence, and recent developments in science, psychology, and economics.

FAR EASTERN STUDIES

Mr. KNIGHT BIGGERSTAFF, *Chairman*; Mr. HERBERT W. BRIGGS; Miss GUSSIE E. GASKILL; Messrs. CHARLES F. HOCKETT, MORRIS E. OPLER, N. ALLEN PATTILLO, E. P. REUBENS, HAROLD E. SHADICK, LAURISTON SHARP.

For a major in Far Eastern Studies the student must have completed Far Eastern Studies 201 and either 202 or 204; Far Eastern Studies 951-952; eighteen additional hours selected from the courses listed below; and such other courses as may be prescribed by the major adviser. All students majoring in Far Eastern Studies must, in addition to passing the Proficiency Examination in Chinese, take at least six additional hours in that language.

201. *INTRODUCTION TO CONTEMPORARY CHINA*. Fall term. Credit three hours. Not open to freshmen. M W F 9. Mr. BIGGERSTAFF, with some lectures by other members of the staff.

Introduction to the land, the people, and the social, political, and economic life and organization of modern China. Attention is given to important historical developments, especially as they relate to the China of today. The political, ideological, and economic impact of the West on China is studied, and contemporary events are analyzed. Consideration is also given to Chinese foreign relations and to American policy toward China.

202. *INTRODUCTION TO CONTEMPORARY SOUTHEAST ASIA*. Spring term. Credit three hours. Not open to freshmen. M W F 9. Mr. SHARP. (Will not be offered spring term, 1951.)

Introduction to the land, the people, and the modern social, political, and economic life of Indochina, Siam, Burma, Malaya, Indonesia, and the Philippines. Attention is given to the native culture base, to the background of colonialism or dependence from which this politically awakened region is emerging, and to the problems of modernization now faced by the 150,000,000 people of the area.

[204. *INTRODUCTION TO CONTEMPORARY JAPAN*. Spring term. Not offered in 1949-1950.]

ELEMENTARY COLLOQUIAL CHINESE. Daily 8, T Th 9. Mr. HOCKETT. (See Chinese 101, 102, Division of Modern Languages.)

INTRODUCTION TO LITERARY CHINESE. M W F 11. Mr. SHADICK. (See Chinese 201, 212, Division of Modern Languages.)

INTERMEDIATE COLLOQUIAL CHINESE. T Th S 11. Mr. HOCKETT. (See Chinese 203, 214, Division of Modern Languages.)

CHINESE CONVERSATION. Hours to be arranged. Mr. HOCKETT. (See Chinese 205-206, Division of Modern Languages.)

LINGUISTIC STRUCTURE OF CHINESE. Spring term of 1950 and alternate years. Credit three hours. Mr. HOCKETT. (See Chinese 232, Division of Modern Languages.)

CHINESE LITERATURE IN TRANSLATION: PHILOSOPHICAL AND HISTORICAL LITERATURE. Fall term. M W F 10. Mr. SHADICK. (See Literature 321.)

CHINESE LITERATURE IN TRANSLATION: IMAGINATIVE LITERATURE. Spring term. M W F 10. Mr. SHADICK. (See Literature 322.)

351-352. *READINGS IN CHINESE LITERATURE: CLASSICAL AND MODERN*. Throughout the year. Prerequisite: Chinese 212 and 214. Mr. SHADICK.

Texts selected to accord with the major interests of the students.

HISTORY OF CHINESE CIVILIZATION. M W F 12. Mr. BIGGERSTAFF. (See History 161-162.)

THE MODERNIZATION OF CHINA. M 2-4. Mr. BIGGERSTAFF. (See History 811-812.)

INTRODUCTION TO FAR EASTERN ART. W 3-5. Mr. PATTILLO. (See Fine Arts 601-602.)

[*SEMINAR: CONTEMPORARY CULTURE CHANGE IN SOUTHEAST ASIA*. Mr. SHARP. (See Sociology and Anthropology 604.) Not offered in 1949-1950.]

ECONOMICS OF THE FAR EAST. T Th S 10. Mr. REUBENS. (See Economics 801-802.)

THE FAR EASTERN POLICY OF THE UNITED STATES. Fall term. M W F 9. Mr. BRIGGS. (See Government 417.)

951-952. *SEMINAR IN FAR EASTERN STUDIES*. Throughout the year. Credit two hours a term; three hours a term for Far Eastern Studies majors. Open only to qualified seniors and graduate students. T 3-5. STAFF.

Discussion of selected topics concerning contemporary China and other parts of Eastern Asia. Each senior major will meet an additional hour each week with his major adviser, who will assist him to organize his knowledge, fill in gaps by means of a program of supervised reading, and prepare for the comprehensive examination required at the end of the senior year.

THE FINE ARTS

Mr. F. O. WAAGE, *Chairman*; Mr. D. L. FINLAYSON, Mr. N. A. PATTILLO.
Students who wish to do their major work in the Fine Arts will choose one of these two options:

1. *GENERAL COURSE. In this option the following courses must be completed:*
 - (1) *Aesthetics, nine hours, namely Psychology 101 and Philosophy 230 and 481.*
 - (2) (a) *Music, nine hours, including Music 101-102.*
 (b) *Visual Arts, nine hours, including Fine Arts 101-102*
 (c) *Literature, nine hours, including Literature 101-102 or 301-302.*
 - (3) *Twelve hours of approved advanced courses forming a logically coherent group within one of three fields: (a) Literature (literary history, criticism, writing, dramatics); (b) Visual Arts (history, practice); (c) Music (theory, composition, application).*
2. *VISUAL ARTS COURSE. In this option a student is required to complete (1) Fine Arts 101-102, 111-112; (2) eighteen hours of other courses in Fine Arts; and (3) fifteen hours in related subjects, including Psychology 101, Philosophy 230, and History 103-104 or the year course in either ancient, medieval, or modern history. Students electing this option are encouraged, but not required, to elect courses in the practice of art given in the College of Architecture (see the announcement of that College.) A student, however, who, wishing to do graduate work in the practice of art, intends to qualify for admission to the Graduate School as a candidate for the M. F. A. degree, should elect thirty hours of such courses in the practice of art.*

GENERAL COURSES

101-102. *INTRODUCTION TO ART.* Throughout the year. Credit three hours a term. Open to all students. M W F 12. Mr. WAAGE.

A survey of the general accomplishments in sculpture and painting of our own culture and those ancestral to it. The first term, which stresses sculpture, comes down to the Renaissance; the second term, which stresses painting, covers the Renaissance and Modern periods. The course attempts to illustrate the evolution of western civilization in terms of its visual arts by showing how art forms arise as a natural consequence of the character of each culture period.

111-112. *INTRODUCTION TO ARCHITECTURE.* Throughout the year. Credit three hours a term. Open to all students. T Th S 11. Mr. PATTILLO.

This course is complementary to Fine Arts 101 and 102.

PRIMITIVE AND ANCIENT

204. *PRIMITIVE ART: THE ART OF EARLY SOCIETIES.* Spring term. Credit three hours. Open to sophomores who have had Fine Arts 101-102, and to upper-classmen without prerequisite. M W F 10. Mr. WAAGE.

The shaping and use of art forms to satisfy the group needs of early cultures wherein art was an indispensable element of every-day life: Old Stone Age Europe, early Egypt, Africa, Australia, and the Americas (Mayas, Incas, etc.); with some consideration of the influence of these primitive and archaic forms on modern art.

CLASSICAL

301. *GREEK SCULPTURE.* Fall term. Credit three hours. Not open to freshmen. M W F 10. Mr. WAAGE.

A study of the sculpture of the first culture whose artistic forms developed beyond

those of the archaic stage; the causes of this advance and the factors which conditioned it. Both the Hellenic and the Hellenistic periods are covered.

[302. *ART OF THE ROMAN EMPIRE*. Spring term. Credit three hours. Not open to freshmen. M W F 10. Mr. WAAGE. Not offered in 1949-1950.]

[315. *NUMISMATICS: ANCIENT COINAGE*. Spring term. Open to upperclassmen by consent of the instructor. Mr. WAAGE. Not offered in 1949-1950.]

MEDIEVAL

[427. *ROMANESQUE AND GOTHIC SCULPTURE*. Fall term. Credit three hours. Not open to freshmen. M W F 11. Mr. FINLAYSON.

Sculpture in the major European countries from 1000 A.D. through the Gothic period. Offered in alternate years. Not offered in 1949-1950.]

[428. *GOTHIC PAINTING*. Spring term. Credit three hours. Not open to freshmen. M W F 11. Mr. FINLAYSON.

Painting in Italy in the fourteenth century, and in France, Germany, and the Netherlands in the fourteenth and fifteenth centuries. Offered in alternate years. Not offered in 1949-1950.]

RENAISSANCE AND MODERN

505. *ITALIAN PAINTING*. Fall term. Credit three hours. Not open to freshmen. T Th S 9. Mr. PATTILLO.

The Renaissance painting of Italy, chiefly of the Florentine and Venetian Schools. Among the major artists whose lives and works will be studied are Fra Angelico, Masaccio, Piero della Francesca, Botticelli, Leonardo, Michelangelo, Raphael, Correggio, Giovanni Bellini, Giorgione, Titian, and Tintoretto.

506. *RENAISSANCE AND MODERN SCULPTURE*. Spring term. Credit three hours. Not open to freshmen. T Th S 9. Mr. PATTILLO.

A study of the main course of development of sculpture in Europe and America from fifteenth century Italy to the present day, with emphasis in each period upon the works of a few representative artists.

511. *AMERICAN PAINTING*. Fall term. Credit three hours. Open to upperclassmen. M W F 2. Mr. FINLAYSON.

Painting in the United States from colonial days to the present.

525. *SEVENTEENTH AND EIGHTEENTH CENTURY PAINTING*. Fall term. Credit three hours. Not open to freshmen. M W F 11. Mr. FINLAYSON.

Painting of the Baroque and Rococo periods in the major European countries. Offered in alternate years.

526. *MODERN PAINTING*. Spring term. Credit three hours. Not open to freshmen. M W F 11. Mr. FINLAYSON.

Nineteenth century painting in France, England, Germany, and the major movements in twentieth century painting. Offered in alternate years.

FAR EASTERN

601-602. *INTRODUCTION TO FAR EASTERN ART*. Throughout the year. Credit three hours a term. Not open to freshmen. W 3-5 with an occasional additional hour to be arranged. Mr. PATTILLO.

The architecture, sculpture, and painting of India to the Mohammedan conquest, and the art of China and Japan from the ancient Chinese bronzes to the nineteenth century.

INFORMAL STUDY

[029]-030. *HISTORICAL SEMINAR IN PAINTING AND SCULPTURE*. Throughout the year. Credit three hours a term. Prerequisite, twelve hours of the History of Art, or the equivalent, and consent of the instructor. Hours to be arranged. Mr. FINLAYSON.

The object of the course is to acquaint students with methods of research in the solution of art historical problems. A larger problem of intrinsic interest which concerns a period, a personality, etc. is treated each term, through division into smaller problems for individual research and report. First term not offered in 1949-1950.

PRACTICE OF ART

For courses in the practice of art and in architecture which may be elected by students in the College of Arts and Sciences, see the Announcement of the College of Architecture; these courses may not be counted in the ninety required hours of Arts courses.

GEOLOGY AND GEOGRAPHY

Mr. W. S. COLE, *Chairman*; Messrs. A. L. ANDERSON, J. D. BURFOOT, JR., W. T. HOLSER, C. M. NEVIN, J. W. WELLS.

For a major in Geology the following courses must be completed: (1) in Geology, courses 101-102, 207, 208, 209, 301, 303, 401, 601, 602, 901 and one hour informal study in one of the divisions of the Department in the second semester of the senior year; (2) in related subjects, Mathematics 133, 171, 172; General Chemistry 105-106; Introductory Physics 107-108; Engineering Drawing; and Plane Surveying. The following elective courses outside of the Department are recommended: Mathematics 173, English 201-202; Public Speaking 101 and either 102 or 205; Statistics, Qualitative Analysis, Quantitative Analysis, Physical Chemistry, Advanced Physics, and Invertebrate Zoology.

COURSES WITHOUT PREREQUISITE

These courses are open to freshmen, and others, without prerequisites.

101-102. *GENERAL GEOLOGY*. Throughout the year; cannot be begun in the spring term. Credit three hours a term (if taken after Geology 115, two hours a term). Satisfies the science requirement of College of Arts and Sciences. Intended for underclassmen. May also be taken as a terminal course by upperclassmen who have satisfied the science requirement in the biological sciences. Lectures, T Th 11. Laboratory, M T W Th or F 2-4:30. Mr. COLE.

The course comprises an introduction to the various branches of geologic science: mineralogic, lithologic, physiographic, structural, glacial, historic, and economic. The purpose of the course is to provide an adequate base for those who will major in geology and a comprehensive survey of earth science for the general student.

105. *GENERAL GEOGRAPHY*. Fall term. Credit three hours. M W F 9. Mr. ———.

A cultural course designed to acquaint the student with the basic elements of geography, together with a regional survey relating countries and productions to the

elements and physical factors of geography. Intended to provide adequate conceptual background of world geography for other subjects, history, economics, etc.

108. *MINERAL RESOURCES*. Spring term. Credit three hours. Intended as a background course for all undergraduates interested in mineral resources for economics, history, government, industry and labor relations, etc. M W F 9. Mr. ANDERSON.

A geographic, cultural study of the nature, utilization, occurrence, distribution, production, consumption, reserves, and political and commercial control of the world's important mineral resources.

111. *ANCIENT LIFE*. Spring term. Credit three hours. No prerequisite, but may well be preceded by Geology 101-102, or Geology 115. M W F 10. Mr. WELLS.

A cultural course devoted to a review of the fossil remains of life in the geologic periods as indicative of the continuity of organic evolution. Attention given chiefly to vertebrate forms from fish to man. For major students in Geology the course is a supplement to Geology 601-602.

113. *ENGINEERING GEOLOGY*. Either term. Credit three hours only. Students who have had Geology 101-102 or 115 may take 113 for one hour credit. Lectures, M W 11. Laboratory, M W or T Th 2-4:30. Mr. ANDERSON.

The purpose of the course is to provide a geologic background so that the engineer will be competent to adapt his work to conform with the limitations imposed by geologic conditions.

115. *ELEMENTARY GEOLOGY*. Either term. Credit three hours. Intended for underclassmen in Agriculture, and those in Arts and Sciences who do not plan to major in Geology. This course cannot be used to satisfy the science group requirement of the College of Arts and Sciences. Lectures, T Th 11. Laboratory, M T W Th or F 2-4:30, or S 8-10:30, or S 10:30-1. Mr. NEVIN.

The purpose of the course is to present the fundamental principles of geology with emphasis on the physical aspects.

SECOND COURSES

201. *HISTORIC GEOLOGY*. Fall term. Credit three hours. Prerequisite, Geology 101-102. Lectures, M W 9. Laboratory, W 2-4:30. Mr. WELLS.

The course comprises a systematic study of the geologic history of the earth, with reference to the rock formations, from the earliest periods to the present: their nature and distribution, the orogenies, paleogeography, the fossil remains, and other characteristics on which their identification and correlation depend. Special emphasis is placed on American geology. Field studies, in the laboratory period, will be made in so far as weather and other circumstances permit. This course is designed not only for Geology majors, but also for students desiring a broad view of the physical history of the earth and the development of life through the ages.

207-208. *MINERALOGY*. Throughout the year. Credit three hours a term. Prerequisite, Chemistry 105-106. Fall term prerequisite to spring term. Mr. HOLSER. Lectures M W 10. Laboratory F 2-4:30.

Fall term: Fundamentals of crystal structure, with emphasis on symmetry; principles of crystal chemistry; relations of structure and chemistry to morphological, mechanical, optical, and other physical properties of crystals. Laboratory work includes demonstrations of these principles and relationships, and their application in identification of minerals.

Spring term: Study of the common minerals by application of the fundamental concepts of the work of the fall term with emphasis on isomorphous substitution. Modes of occurrence are discussed, and laboratory work emphasizes mineral identification and relationships.

209. *LITHOLOGY*. Spring term. Credit two hours. Prerequisite, Geology 101-102 and 207-208. Mr. BURFOOT and Mr. HOLSER. T Th 2-4:30.

The mineral composition, texture, classification, identification, modes of origin, and properties of igneous, sedimentary, metamorphic, and metalliferous rocks, studied without the use of the petrographic microscope.

STRUCTURAL GEOLOGY AND SEDIMENTATION

301. *STRUCTURAL GEOLOGY*. Fall term. Credit three hours. Prerequisite, Geology 101-102. Lectures, M W 11. Laboratory, M 2-4:30. Mr. NEVIN.

The purpose of the course is to classify and analyze geologic structures with reference to their nature and origin, and in regard to their use in the interpretation of geologic problems both theoretical and practical.

303. *SEDIMENTATION*. Spring term. Credit three hours. Prerequisite, Geology 101-102. Registration limited. Intended for students who are majoring in Geology and those interested in the engineering problems related to sedimentation. Lectures, M W 11. Laboratory, M 2-4:30. Mr. NEVIN.

The course comprises a laboratory study of the accumulation and ordering of sediments, together with critical discussions of the problems these present.

321. *PETROLEUM GEOLOGY*. Spring term. Credit three hours. Prerequisite Geology 101-102. For students who intend to enter the oil industry. Lectures, T Th 9. Laboratory, Th 2-4:30. Mr. NEVIN.

The purpose of the course is to acquaint the student with what is known in regard to the origin, distribution, and geology of petroleum and natural gas.

391-392. *SEMINAR IN STRUCTURAL GEOLOGY AND SEDIMENTATION*. Throughout the year. Credit variable. For advanced students. M 4:45. Mr. NEVIN.

395-396. *ADVANCED OR SPECIAL WORK IN SEDIMENTATION, STRUCTURAL, AND PETROLEUM GEOLOGY*. Throughout the year. Credit variable. Intended for advanced and graduate students in Geology. Prerequisite, consent of the instructor. F 9-11:30. Mr. NEVIN.

The purpose of the course is to provide for direction of original investigations, essential to the further training of the student in geologic interpretations.

030. *INFORMAL STUDY*. Mr. NEVIN. See italicized statement above.

GEOMORPHOLOGY AND GLACIAL GEOLOGY

401. *GEOMORPHOLOGY*. Fall term. Credit three hours. Prerequisite, Geology 101-102. Intended for majors in Geology and others interested in the origin and development of the surface forms of the earth. Lectures, T Th 9. Laboratory, T 2-4:30. Mr. _____.

The purpose of the course is to provide an explanatory account of the relief of the earth's surface.

403. *GLACIERS AND GLACIATION*. Spring term. Credit three hours. Prerequisite, Geology 101-102. Intended for majors in Geology and Agronomy, and others interested in the phenomena and results of glacierization, especially that of the Pleistocene. Lectures, T Th 10. Laboratory, T 2-4:30. Mr. ———.

Living glaciers and the phenomena of the glacial period. Students are required to have one or more Saturdays free for all-day excursions.

495-496. *ADVANCED OR SPECIAL WORK IN GEOGRAPHY, GEOMORPHOLOGY, OR GLACIAL GEOLOGY*. Credit variable. Prerequisite, consent of the instructor. For advanced and post-graduate students. M 7 P.M. Mr. ———.

040. *INFORMAL STUDY*. Mr. ———. See italicized statement above.

MINERALOGY AND PETROLOGY

501. *OPTICAL MINERALOGY*. Fall term. Credit three hours. Prerequisite, Geology 207-208. Mr. HOLSER. Lectures W 9. Laboratories F 8-10:30 and S 9-11:30, McGraw 345. Given in 1949-1950 and alternate years.

Expansion of the theory of optical properties of crystals as developed in Geology 207. Application of the theory to the determination and study of minerals with the petrographic microscope. The common rock-forming minerals are studied in fragments and in thin sections.

502. *PETROGRAPHY*. Spring term. Credit three hours. Prerequisite, Geology 501. Mr. HOLSER. Lecture, W 9. Laboratories, F 8-10:30, S 9-11:30, McGraw 345. Given in 1949-1950 and alternate years.

A study of the mineral and chemical composition, and textures of igneous, sedimentary, and metamorphic rocks; their classification and determination by means of the petrographic microscope.

521. *SEDIMENTARY PETROGRAPHY*. Fall term. Credit three hours. Prerequisite, Geology 501. Mr. BURFOOT. Lectures, M W 11, McGraw 145, Laboratory, F 10:30-1:00. Given in 1949-1950 and alternate years.

The methods of investigating the mineral composition, the texture, and other physical characteristics of sedimentary rocks, and some of the applications of these methods to geological problems. Emphasis is placed on the methods of preparation of mineral grains for study and on the identification and interpretation of these grains by means of the petrographic microscope.

[575. *IGNEOUS PETROGENY*. Fall term. Credit three hours. Prerequisite, Geology 502. Mr. BURFOOT. Lectures M W 9. Laboratory, F 10:30-1. Given in 1950-1951 and alternate years.]

[577. *METAMORPHIC GEOLOGY*. Spring term. Credit three hours. Prerequisite, permission of instructor. Mr. BURFOOT. Lectures, M W 9. Laboratory, F 8-10:30. Preregistration required. Given in 1950-1951 and alternate years.]

[581. *STRUCTURAL MINERALOGY*. Fall term. Credit three hours. Prerequisite, Geology 207-208. Mr. HOLSER. Lectures, M W 11. Laboratory, S 10:30-1. Given in 1950-1951 and alternate years.]

583. *CHEMICAL MINERALOGY*. Spring term. Credit three hours. Prerequisite, Geology 207-208; recommended but not required: Geology 501, 581, Chemistry 407-

408. Mr. HOLSER. Lectures, M W 11. Laboratory, F 10:30-1. Given in 1950-1951 and alternate years.

Principles of physical chemistry in their application to mineralogy. Thermodynamic equilibria; effects of temperature, pressure, and stress; anhydrous systems; volatile components; solubilities in solids, liquids and gases; colloidal phenomena. Viscosity, reaction rates, diffusion processes. Geochemical distribution of the elements and their isotopes. Applications to problems in igneous, metamorphic, sedimentary, and metaliferous rocks discussed throughout; readings in current and classical literature. Laboratory adapted to individual needs, and may include gravimetric, universal stage, thermal, spectroscopic, or other advanced methods of chemical determination.

591-592. *SEMINAR IN MINERALOGY AND PETROLOGY*. Throughout the year. Credit one hour a term. Prerequisite, permission of instructor. Mr. HOLSER and Mr. BURFOOT. W 4:45.

Literature, special topics, advanced methods. For all interested students; attendance expected of majors and minors in mineralogy and petrology.

595-596. *ADVANCED OR SPECIAL WORK IN MINERALOGY AND PETROLOGY*. Throughout the year. Credit variable. Prerequisites, variable. Mr. BURFOOT and Mr. HOLSER. Days and hours to be arranged.

Adapted to the needs of the individual student. Advanced methods, special problems, research. The purpose of this course is to offer an opportunity for advanced students or those with special interests to work in areas in advance of or not offered in formal courses. Adapted to the needs of the individual student.

050. *INFORMAL STUDY*. Mr. BURFOOT, Mr. HOLSER. See italicized statement above.

PALEONTOLOGY AND STRATIGRAPHY

601-602. *INVERTEBRATE PALEONTOLOGY*. Throughout the year. Credit three hours a term. Prerequisite, Geology 101-102 and, if possible, Invertebrate Zoology. Intended for students who are majoring in Geology and for students in Biology interested in the fossil evidence of the development of organisms. Lectures. T Th 10. Laboratory, Fall term, Th 2-4:30; Spring term, W 2-4:30. Mr. COLE, Mr. WELLS.

Fall term: paleobiology and classification of important fossil invertebrate organisms; Spring term: key fossils of the geologic periods. Certain laboratory periods will be devoted to the collection and determination of fossil assemblages from selected horizons of the Paleozoic formations of central New York.

605-606. *STRATIGRAPHY*. Throughout the year. Credit three hours a term. Prerequisites, Geology 101-102 and first term of 601-602. Intended for students majoring in geology, T Th 9, W 10. Mr. COLE, Mr. WELLS.

The principles of stratigraphy, developed by detailed study of selected American and European systemic examples. Fall term: the Paleozoic; Spring term: the Mesozoic and Cenozoic.

675. *MICROPALEONTOLOGY*. Spring term. Credit two hours. Prerequisite, consent of the instructor; preparation should include Geology 101-102, 201, 601-602, and 605. Not open to underclassmen. Intended for students who are majoring in Geology, and graduates, especially those who are planning careers in the geology of petroleum deposits. W 9 and hours to be arranged. Mr. COLE.

Study of the microfossils, chiefly Foraminifera, in their relation to the correlation of strata, as used in the development of oil fields. The course is designed for advanced students in paleontology.

681. *STRATIGRAPHY OF NEW YORK STATE*. Spring term. Credit two hours. Prerequisites, Geology 101-102, 601-602, 605, or consent of the instructor. Intended for upperclassmen and graduates in Geology, and others with the necessary training. The course will be given only if sufficient numbers of qualified students register. Lectures in winter months, all-day field trips in spring months. T Th 12. Mr. WELLS.

The classic Paleozoic section of Central New York will be studied through lectures, readings, and field observations.

695-696. *ADVANCED OR SPECIAL WORK IN PALEONTOLOGY AND STRATIGRAPHY*. Throughout the year. Credit variable. Prerequisite, Geology 601-602, and 605. Intended for upperclassmen majoring in Geology, and graduates. W 7 P.M. Mr. COLE.

The purpose of the course is to provide for direction in the study of particular problems in paleontology and stratigraphy, adapted to the needs of the individual student.

060. *INFORMAL STUDY*. Mr. COLE, Mr. WELLS. See italicized statement above.

ECONOMIC GEOLOGY

701-702. *GENERAL ECONOMIC GEOLOGY*. Throughout the year. Credit three hours a term. Prerequisites, Geology 101-102, or 113, and 207, or consent of the instructor. Intended for Geology majors, and for Chemistry, Chemical Engineering, and Civil Engineering students interested in industrial source materials. Lectures, T Th 11. Laboratory, F 2-4:30. Mr. ANDERSON.

Nature, mode of occurrence, distribution, and utilization of the more important mineral deposits. The work of the fall term concerns non-metalliferous deposits; in the spring term, the metalliferous deposits. Field trips are included as a part of the laboratory work. The purpose of the course is to give the student a geologic background-knowledge of the properties, occurrence, etc., of the minerals and rocks of value to man.

712. *METALLURGICAL RAW MATERIALS*. Fall term. Credit three hours. For second year students in Metallurgical Engineering. Mr. ANDERSON. Lectures, M W F 10.

The source, occurrence, associations, distribution, and economic aspects of the commercially important ore, refractory, and fluxing materials that enter metallurgical operations.

[721. *MICROSCOPIC STUDY OF ORE MINERALS*. Fall term. Credit two hours. Prerequisite, Geology 207-208. Mr. ANDERSON. F 8-10:30, S 8-10:30. Given in alternate years; not given in 1949-1950].

[732. *MINING GEOLOGY*. Spring term. Credit three hours. Prerequisites, Geology 701-702. Mr. ANDERSON. Given in alternate years; not given in 1949-1950. M W F 1.]

775-776. *MINERAL DEPOSITS*. A two-term course. Credit three hours a term. Prerequisites, Geology 701-702. Mr. ANDERSON. Lectures, M W F 1. Given in 1949-1950 and alternate years.

Structural occurrence and origin of the economically important mineral deposits. Fall term: the deposits of primary origin associated more or less closely with igneous phenomena; spring term: the deposits of secondary origin associated more or less directly with processes of weathering and sedimentation.

791-792. *SEMINAR IN ECONOMIC GEOLOGY*. Throughout the year. Credit one hour a term. Registration by invitation of the instructor. Intended primarily for majors and minors in Economic Geology. T 4:45. Mr. ANDERSON.

Seminar designed to keep the student abreast of current advances in the field of Economic Geology.

795-796. *ADVANCED OR SPECIAL WORK IN ECONOMIC GEOLOGY*. Throughout the year. Credit variable. Prerequisites, dependent on nature of the work, but Geology 208, 501 and 701-702 (or 721-722) are ordinarily required. Intended for graduate majors in Economic Geology. T 12. Mr. ANDERSON.

Work designed to meet the needs and training of the student. May include research in Economic Geology, or guided study of advanced or special problems in Economic Geology.

070. *INFORMAL STUDY*. Mr. ANDERSON. See italicized statement above.

FIELD COURSES

901. *GEOLOGIC MAPPING*. Given at the Summer Field Camp. Credit six-hours. Mr. NEVIN.

Instruction in the fundamental methods used in geologic mapping, together with practical work in the field. For students majoring in Geology. Special circular from the department on request.

912. *GEOLOGIC INTERPRETATION OF AERIAL PHOTOGRAPHY*. Spring term. Credit three hours. Prerequisite, Geology 301. Intended for majors in geology. Lecture, M 9, two laboratories by arrangement. Mr. WELLS.

Aerial photographs as a substitute for maps; interpretation of geology and preparation of maps from aerial photographs.

GERMAN LITERATURE

Mr. VICTOR LANGE, *Chairman*; Messrs. ERICH KAHLER, W. F. OECHLER,

The work of the Department of German Literature is intended to contribute primarily to a humanistic education and secondarily to the training of teachers and research scholars. It is concerned with the history and interpretation of the writings of German men of letters and with an understanding of the cultural background and, especially, the language, which these works represent.

All work in German Studies presupposes proficiency in German (except in those courses which are open to students in all departments and which present the literature in translation). The student of German Literature will devote himself to the three methodological disciplines of literary studies: (1) history, (2) literary criticism, and (3) the analysis of ideas.

The Department offers two programs for majors each requiring linguistic proficiency on the level of German 203; one devoted mainly to the study of German Literature and one, more broadly, to the study of German life and letters.

For a major in German Literature the following courses must be completed: (1) at least twenty-one hours of advanced courses in German Literature, including 301-302, 333, and 365-366; (2) in

related subjects, at least fifteen hours selected from the Division of Literature, the Division of Modern Languages, the Classics, Ancient and European History, Philosophy. The student should consult his adviser for the planning of a coherent program.

For a major in German Studies the following courses must be completed: (1) in the Division of Modern Languages German 241; (2) German Literature 300, 301-302, 333, 365-366; (3) in related subjects History 423, 426; Government 104; (4) at least twelve hours selected from the following: German 214, 232; Classics 401; Philosophy 579, 580; Government 411; Sociology 601.

For additional courses in literature, see the announcement of the Division of Literature.

151-152. *MASTERS OF GERMAN LITERATURE*. Throughout the year. Credit three hours a term. Open to all students. A knowledge of German is not required. Lectures and reading in English. M W F 12. Mr. LANGE.

A survey of German letters in relation to English and European thought. The course stresses the works of certain poets, novelists, and dramatists, and also those German historians and philosophers who have contributed to the intellectual history of Europe and, especially, to the contemporary system of values. The first term will deal with the period to 1870, the second with the contemporary scene and such writers as Thomas Mann, Kafka, and Rilke. Either term may be taken independently of the other.

300. *SOCIAL AND INTELLECTUAL EVOLUTION OF MODERN GERMANY*. Fall term. Credit three hours. M W F 12. Mr. KAHLER.

The course will deal with the period from Luther to the present. Representative works will be read and discussed.

301-302. *SURVEY OF GERMAN LITERATURE*. Throughout the year. Credit three hours a term. M W F 10. Mr. OECHLER.

A survey of the development of German literature from the origins to the end of the nineteenth century. Representative works will be read in class in German with supplementary lectures and outside reading in German and English.

310. *GERMAN REFORMATION AND GERMAN BAROQUE*. Fall term. Credit three hours. M W F 11. Mr. OECHLER.

An introduction to the intellectual life and culture of Germany in the sixteenth and seventeenth centuries. Representative works of Luther, Hutten, Hans Sachs, Opitz, Gryphius, Grimmelshausen and others will be read in German.

315. *GERMAN POETRY FROM GOETHE TO THE PRESENT*. Spring term. Credit three hours. M W F 11. Mr. ———.

316. *GERMAN PROSE FICTION FROM GOETHE TO THOMAS MANN*. Fall term. Credit three hours. T Th S 11. Mr. OECHLER.

Reading and discussion of German novels and short stories from the end of the eighteenth century to the present.

325. *THE GERMAN DRAMA OF THE NINETEENTH CENTURY*. Spring term. Credit three hours. M W F 11. Mr. OECHLER.

Reading and discussion of select plays by Kleist, Grillparzer, Büchner, Grabbe, Hebbel, and Hauptmann.

333. *MODERN GERMAN LITERATURE, 1870-1940*. Fall term. Credit three hours. M W F 2. Mr. KAHLER.

An introduction to the history of ideas and values of the past seventy years and a specific discussion of the representative figures of the period: Nietzsche, Hauptmann, Thomas Mann, Rilke, Hofmannsthal, George, etc. Lectures in German.

345. *LESSING AND THE PERIOD OF ENLIGHTENMENT*. Spring term. Credit three hours. M W F 12. Mr. OECHLER.

German literature of the eighteenth century will be read and discussed, with detailed analysis of the works of Lessing.

[350. *SCHILLER*. Fall term 1950 and alternate years. Credit three hours. M W F 12. Mr. KAHLER.]

365-366. *GOETHE*. Throughout the year. Credit three hours a term. M W F 9. Mr. LANGE.

A detailed study of Goethe's work with special emphasis upon his poetry, his prose, and Faust I and II. The intellectual background of Goethe's Europe will be established, and some of his contemporaries will be discussed. Either term may be taken independently of the other.

420. *GERMAN ROMANTICISM*. Spring term. Credit three hours. M W F 12. Mr. ———.

(470. *PROSEMINAR IN GERMAN LITERATURE*. Spring term 1950 and alternate years. Credit two hours. One meeting a week at a time to be arranged. Mr. LANGE.

An introduction, for majors and graduates, to the sources and methods of German literary studies.)

475-476. *SEMINAR IN GERMAN LITERATURE*. Throughout the year. Credit three hours a term. One meeting a week at a time to be arranged. Fall term: Der George Kreis. Mr. KAHLER. Spring term: Sturm und Drang. Mr. LANGE.

080. *INFORMAL STUDY*. Open to qualified majors. Mr. OECHLER.

090. *INFORMAL STUDY*. Open to qualified majors. Mr. LANGE.

GOVERNMENT

Mr. HERBERT W. BRIGGS, *Chairman*; Messrs. ROBERT E. CUSHMAN, MARIO EINAUDI, ELIAS HUZAR, CLINTON L. ROSSITER.

For a major in Government the following courses must be completed: (1) Government 101 and either Government 102 or 104; (2) eighteen additional hours in the Department; (3) in related subjects, twenty-four hours selected with the approval of the adviser from courses (other than the introductory courses) in Economics, History, Philosophy, Sociology and Anthropology, Business and Public Administration, Labor and Industrial Relations, and Regional Planning. Of the hours in related subjects, at least twelve must be in History.

Juniors and seniors majoring in the Department who have a grade of 85 or better in one-half of the hours they have passed may take Informal Study in Government.

Candidates for honors in Government should consult the Chairman prior to the commencement of the senior year. They will be required to take three hours of Informal Study during each semester of the senior year. They will also be required to pass a comprehensive examination.

Students registered in the combined Arts-Law, or Arts-Business and Public Administration courses with a major in Government will be required to take (1) Government 101 and either Government 102 or 104; (2) twelve additional hours in the Department; (3) in related subjects, fourteen hours.

AMERICAN GOVERNMENT AND INSTITUTIONS

101. *AMERICAN NATIONAL GOVERNMENT*. Fall term. Credit three hours. Open to all students, although primarily intended for freshmen. Lectures, T Th 2. Discussion sections to be arranged. Mr. CUSHMAN and Mr. ROSSITER.

A general introduction to American national government and politics. Emphasis will be placed upon historical development, organization, powers, and practical working.

102. *STATE AND LOCAL GOVERNMENT*. Spring term. Credit three hours. Open to all students, although primarily intended for freshmen. Lectures, T Th 2. Discussion sections to be arranged. Mr. HUZAR.

American state and local governments, their historical development, organization, powers, and practical working.

213. *CONGRESS: ORGANIZATION AND METHODS OF WORK*. Fall term. Credit three hours. Open to upperclassmen and sophomores who have had Government 101 or 102. M W F 2. Mr. HUZAR.

Problems and practices of membership, organization, and operation of the national legislature.

216. *THE AMERICAN PRESIDENCY*. Spring term. Credit three hours. Open to upperclassmen who have had Government 101 or 102. M W F 11. Mr. ROSSITER.

A study of the presidential office; the constitutional, administrative, and political position of the President; relation to Congress; current problems and proposals.

218. *AMERICAN POLITICAL PARTIES*. Spring term. Credit three hours. Open to sophomores and to upperclassmen. Prerequisite, Government 101. M W F 2. Mr. ROSSITER.

The history, organization, functions, and significance of political parties in the United States.

231-232. *PUBLIC ADMINISTRATION*. Throughout the year. Credit three hours a term. Open to upperclassmen. M W F 10. Mr. HUZAR.

The following topics will be emphasized: efficiency and responsibility in public administration; principles and problems of administrative organization, the civil service, fiscal management, and methods of administrative action.

235. *AMERICAN POLITICAL AND CONSTITUTIONAL THEORY*. Fall term. Credit three hours. Open to upperclassmen. Prerequisite, Government 101, or consent of the instructor. M W F 11. Mr. ROSSITER.

A survey of the development of American political thought with special reference to its influence on constitutional development.

241. *CONSTITUTIONAL LAW: THE AMERICAN FEDERAL SYSTEM*. Fall term. Credit three hours. Open to upperclassmen. Prerequisite, Government 101, or consent of the instructor. T Th S 11. Mr. CUSHMAN.

Judicial interpretation of the Constitution; the nature of judicial review; separation of government powers; relations between state and national governments; construction of national powers.

242. *CONSTITUTIONAL LAW: FUNDAMENTAL RIGHTS AND IMMUNITIES*. Spring term. Credit three hours. Open to upperclassmen. Prerequisite, Government 101, or consent of the instructor. T Th S 11. Mr. CUSHMAN.

Privileges and immunities of citizenship; protection of civil and political rights; the obligation of contracts; due process of law and the equal protection of the laws.

275-276. *SEMINAR IN CONSTITUTIONAL PROBLEMS*. Throughout the year. Credit two hours a term. Open to graduate students and qualified seniors. Hours to be arranged. Mr. CUSHMAN.

286. *SEMINAR IN PUBLIC ADMINISTRATION*. Spring term. Credit two hours. Open to graduate students and qualified seniors. Hours to be arranged. Mr. HUZAR.

A survey of some administrative problems of the American defense.

050. *INFORMAL STUDY*. Mr. ROSSITER. See italicized statement above.

070. *INFORMAL STUDY*. Mr. HUZAR. See italicized statement above.

090. *INFORMAL STUDY*. Mr. CUSHMAN. See italicized statement above.

COMPARATIVE GOVERNMENT AND POLITICAL THEORY

104. *COMPARATIVE GOVERNMENT*. Spring term. Credit three hours. Open to all students, although primarily intended for freshmen. Lectures, T Th 2. Discussion sections to be arranged. Mr. EINAUDI.

A comparative study of basic governmental institutions and processes, with major emphasis on Europe.

311. *CONSTITUTIONAL GOVERNMENT OF EUROPE*. Fall term. Credit three hours. Open to sophomores and to upperclassmen. T Th S 9. Mr. EINAUDI.

The reconstruction of democratic and constitutional governments after the totalitarian crisis.

321. *DEVELOPMENT OF MODERN POLITICAL THOUGHT*. Fall term. Credit three hours. Open to sophomores with consent of the instructor and to upperclassmen. T Th S 10. Mr. EINAUDI.

Political thought from the sixteenth century to the French revolution: from Machiavelli to Rousseau.

322. *CONTEMPORARY POLITICAL THOUGHT*. Spring term. Credit three hours. Open to sophomores with the consent of the instructor and to upperclassmen. T Th S 10. Mr. EINAUDI.

A study of the major currents in political thought in the nineteenth and twentieth centuries.

[331. *PUBLIC CONTROL OF ECONOMIC LIFE*. Fall term. Credit three hours. Open to upperclassmen. Mr. EINAUDI. Not given in 1949-1950.]

[375-376. *SEMINAR IN POLITICAL THEORY*. Throughout the year. Credit three hours a term. Open to graduate students and qualified seniors. Hours to be arranged. Preregistration required. Mr. EINAUDI. Not given in 1949-1950.]

385-386. *SEMINAR IN COMPARATIVE CONSTITUTIONAL LAW*. Throughout the year. Credit three hours a term. Open to graduate students and qualified seniors. Hours to be arranged. Preregistration required. Mr. EINAUDI.

060. *INFORMAL STUDY*. Mr. EINAUDI. See italicized statement above.

INTERNATIONAL RELATIONS

[411. *INTERNATIONAL POLITICS*. Fall term. Credit three hours. Open to sophomores and to upperclassmen. M W F 9. Mr. BRIGGS. Not offered in 1949-1950.]

414. *INTERNATIONAL ORGANIZATION*. Spring term. Credit three hours. Open to sophomores and to upperclassmen. M W F 9. Mr. BRIGGS.

An analysis of international governmental procedures and institutions: international administration; international legislation; power politics and collective efforts to maintain international peace and security; the League of Nations; the United Nations and specialized agencies; the judicial function and the International Court of Justice.

417. *CONTEMPORARY AMERICAN FOREIGN POLICY: THE FAR EASTERN POLICY OF THE UNITED STATES*. Fall term. Credit three hours. Open to sophomores and to upperclassmen. M W F 9. Mr. BRIGGS.

An analysis of the relations of the United States with China, Japan, and the European powers with Far Eastern interests, primarily since 1898.

[418. *CONTEMPORARY AMERICAN FOREIGN POLICY: THE LATIN AMERICAN POLICY OF THE UNITED STATES*. Spring term. Credit three hours. Open to sophomores and to upperclassmen. Mr. BRIGGS. Not offered in 1949-1950.]

441-442. *INTERNATIONAL LAW*. Throughout the year. Credit three hours a term. Open to qualified upperclassmen. M W F 12. Mr. BRIGGS.

A systematic study of the nature, development, and judicial application of the principles of international law. Cases, readings, and discussions.

475. *SEMINAR IN INTERNATIONAL LAW AND INTERNATIONAL ORGANIZATION*. Throughout the year. Credit two hours a term. Open to graduate students and qualified seniors. Hours to be arranged. Mr. BRIGGS.

080. *INFORMAL STUDY*. Mr. BRIGGS. See italicized statement above. Consult the instructor.

HISTORY

Mr. PAUL W. GATES, *Chairman*; Messrs. KNIGHT BIGGERSTAFF, C. W. DE KIEWIET, E. W. FOX, H. E. GUERLAC, M. L. W. LAISTNER, F. G. MAR-CHAM, C. P. NETTELS, CARL STEPHENSON, MARC SZEFTTEL.

For a major in History the following courses must be completed: (1) in History at least thirty hours; (2) in related subjects, at least eighteen hours which shall be determined by the student in consultation with his adviser. Of the hours in related subjects at least six shall be in other than introductory courses.

101. *OUTLINES OF ANCIENT HISTORY; GREECE AND THE NEAR EAST*. Fall term. Credit three hours. M W F 9. Mr. LAISTNER.

102. *OUTLINES OF ANCIENT HISTORY; ROME*. Spring term. Credit three hours. M W F 9. Mr. LAISTNER.

103-104. *ORIGINS OF CONTEMPORARY CIVILIZATION*. A survey of European History from the time of the ancient Greeks to the present. Throughout the year. History 103 or consent of the instructor are prerequisites for History 104. Credit three hours a term. Open to freshmen and sophomores who have not had History 101-102 or 107-108. T Th S 9. Mr. FOX and assistants.

Designed to introduce the basic materials and methods of historical analysis and their application to contemporary problems. A lecture course with weekly section meetings.

[105. *MEDIEVAL HISTORY*. Fall term. Credit three hours. M W F 10. Mr. STEPHENSON. Not offered in 1949-1950.]

106. *MODERN EUROPEAN HISTORY*. 1500-1815. Fall term. Credit three hours. M W F 10. Mr. STEPHENSON.

A sketch course with lectures, reading, and map work.

107. *ENGLISH HISTORY TO THE SEVENTEENTH CENTURY*. Fall term. Credit three hours. T Th S 8. Mr. MARCHAM.

A study of the English people from Anglo-Saxon to Elizabethan times with attention to political, economic, social, and intellectual developments.

108. *ENGLISH HISTORY: SEVENTEENTH CENTURY TO THE PRESENT*. Spring term. Credit three hours. T Th S 8. Mr. MARCHAM.

The early growth and mature achievement of the British people in imperial and world affairs.

147. *HISTORY OF RUSSIA TO 1917*. Fall term. Credit three hours. T Th S 9. Mr. SZEFTTEL.

Beginnings of Russia, evolution of political institutions and social structure under the Empire, economic development, reform and revolutionary action, main cultural trends, external relations.

148. *THE RUSSIAN REVOLUTION AND THE SOVIET PERIOD*. Spring term. Credit three hours. T Th S 9. Mr. SZEFTTEL.

Causes of the Revolution and its development. Problems of economic, social, political, and cultural life from October 1917 to the present.

151. *AMERICAN HISTORY, 1607-1861*. Fall term. Credit three hours. M W F 11. Mr. NETTELS.

152. *AMERICAN HISTORY, 1861 TO THE PRESENT*. Spring term. Credit three hours. M W F 9. Mr. GATES. M W F 11. Mr. NETTELS.

161. *HISTORY OF CHINESE CIVILIZATION: TO 1842*. Fall term. Credit three hours. M W F 12. Mr. BIGGERSTAFF.

A rapid survey of the more significant Chinese cultural developments from earliest times until the establishment of formal relations with the West.

162. *HISTORY OF CHINESE CIVILIZATION: SINCE 1842*. Spring term. Credit three hours. M W F 12. Mr. BIGGERSTAFF.

A more detailed survey of Chinese history since the beginning of significant Western influence.

165-166. *SCIENCE IN WESTERN CIVILIZATION*. Throughout the year. Credit three hours a term. A survey of the development of science in its relation to European and American civilization. Primarily for engineers and science majors, but open to other qualified upperclassmen. M W F 11. Mr. GUERLAC.

211. *GREEK HISTORY, 500-323 B.C.* Fall term. Credit three hours. Prerequisite, History 101, or the equivalent. M W F 11. Mr. LAISTNER.

[212. *THE HELLENISTIC AGE*. Spring term. Credit three hours. Prerequisite, History 101 and 102 or a satisfactory equivalent. M W F 11. Mr. LAISTNER. Not offered in 1949-1950.]

[213. *THE ROMAN REPUBLIC, 133-30 B.C.* Fall term. Credit three hours. Prerequisite, History 101 and 102 or a satisfactory equivalent. M W F 11. Mr. LAISTNER. Not offered in 1949-1950.]

214. *THE ROMAN EMPIRE, 30 B.C.-A.D. 180*. Spring term. Credit three hours. Prerequisite, History 101 and 102 or a satisfactory equivalent. M W F 11. Mr. LAISTNER.

[309-310. *MEDIEVAL SOCIETY, LEARNING, AND EDUCATION*. Throughout the year. Credit three hours a term. An advanced course with limited enrollment. Prerequisite, consent of the instructor. Hours to be arranged. Mr. STEPHENSON. Not offered in 1949-1950.]

[312. *INTELLECTUAL HISTORY OF EUROPE FROM THE FOURTH TO THE SIXTEENTH CENTURY*. Spring term. Credit three hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. STEPHENSON. Not offered in 1949-1950.]

[411-412. *FRANCE IN THE SEVENTEENTH AND EIGHTEENTH CENTURIES*. Throughout the year. Credit three hours a term. Mr. deKIEWIET. Not offered in 1949-1950.]

[421. *THE EUROPEAN REVOLUTION, 1789-1848*. Fall term. Prerequisite: History 103-104 or consent of the instructor. W F 2:00-3:30. Mr. FOX. Not offered in 1949-1950.]

[423. *MODERNIZATION OF EUROPE*. Fall term. Credit three hours. Prerequisite, History 104 or consent of the instructor. W F 2:00-3:30. Mr. FOX. Not offered in 1949-1950.]

[424. *EVOLUTION OF THE FRENCH REPUBLIC*. Spring term. Credit three hours. Prerequisite: History 104 or consent of the instructor. W F 2:00-3:30. Mr. FOX. Not offered in 1949-1950.]

426. *ORIGINS OF THE THIRD REICH*. Spring term. Credit three hours. Prerequisite: History 104 or consent of the instructor. W F 2:00-3:30. Mr. FOX.

Beginning with the Congress of Vienna and emphasizing the political and industrial developments during the Bismarckian period and their consequences in the first world war and Weimar Republic.

427. *EUROPE AND THE WORLD WARS*. Fall term. Prerequisite: History 103-104 or consent of the instructor. W F 2:00-3:30. Mr. FOX.

From the origins of the first world war to the present, with special attention to the relation of internal political, economic, and social developments to international affairs.

455-456. *INTELLECTUAL HISTORY OF MODERN RUSSIA*. Throughout the year. Credit three hours a term. Prerequisite, History 147-148, or consent of the instructor. T Th 2:00-3:30. Mr. SZEFTTEL.

Evolution of political, religious, educational, literary, and other features of Russian culture, with emphasis on nationalistic and revolutionary thought.

In the second term, which will cover the period since 1900, special attention will be given to liberal, agrarian, socialist, and Marxist ideas, and intellectual and cultural trends under the Soviet government.

[457. *RUSSIAN HISTORIOGRAPHY*. Fall term. Credit three hours. Prerequisite, History 147-148, or consent of the instructor. T Th S 2:00-3:30. Mr. SZEFTTEL. Not offered in 1949-1950.]

[458. *KIEV RUSSIA AND MUSCOVY*. Spring term. Credit three hours. Prerequisite, History 147-148, or consent of the instructor. T Th 2:00-3:30. Mr. SZEFTTEL. Not offered in 1949-1950.]

495-496. *SEMINAR IN RUSSIAN AREA STUDIES*. Throughout the year. Credit and hours to be arranged. Open to seniors and graduate students. Prerequisite, consent of the Director. Messrs. SZEFTTEL, CLARK, FAIRBANKS, NABOKOV, and others.

Selected topics concerning problems of Russian culture in its different aspects.

511. *ENGLISH CONSTITUTIONAL HISTORY TO 1485*. Fall term. Credit three hours. Prerequisite, History 105, History 107, or consent of the instructor. M W F 2. Mr. STEPHENSON.

512. *ENGLISH CONSTITUTIONAL HISTORY SINCE 1485*. Spring term. Credit three hours. Prerequisite, History 105 and 106, or 107 and 108. T Th S 11. Mr. MARCHAM.

The nature and causes of the principal changes in the government of Great Britain and her Empire.

[515. *HISTORY OF ENGLAND UNDER THE TUDORS*. Fall term. Credit three hours. Prerequisite, History 107-108, or consent of the instructor. T Th S 11. Mr. MARCHAM. Not offered in 1949-1950.]

[516. *HISTORY OF ENGLAND UNDER THE STUARTS*. Spring term. Credit three hours. Prerequisite, History 107-108, or consent of the instructor. T Th S 11. Mr. MARCHAM. Not offered in 1949-1950.]

[517. *HISTORY OF ENGLAND IN THE 19TH CENTURY*. Fall term. Credit three hours. Prerequisite, History 107-108 or consent of the instructor. T Th S 11. Mr. MARCHAM. Not offered in 1949-1950.]

518. *HISTORY OF ENGLAND IN THE 20TH CENTURY*. Fall term. Credit three hours. Prerequisite, History 107-108 or consent of the instructor. T Th S 11. Mr. MARCHAM.

The principal changes in the political, economic, social, and intellectual life of Great Britain and the Empire. Readings in contemporary literature.

[711. *AMERICAN COLONIAL HISTORY TO 1763*. Fall term. Credit three hours. For upperclassmen and graduates. M W F 1. Mr. NETTELS. Not offered in 1949-1950.]

712. *THE AGE OF WASHINGTON, 1763-1800*. Spring term. Credit three hours. For upperclassmen and graduates. M W F 1. Mr. NETTLES.

The struggle for American independence, the making of the Constitution, the founding of the Federal Government, and the shaping of national policies.

717. *AMERICAN BIOGRAPHY*. Fall term. Credit three hours. For upperclassmen and graduates. M W F 1. Mr. NETTELS.

Studies in the work and influence of leaders in various fields of activity who are representatives of main factors or trends in American History.

[721-722. *AMERICAN HISTORY: HISTORY OF THE WEST*. Throughout the year. Credit three hours a term. M W F 12. Mr. GATES. Not offered in 1949-1950.]

726. *RECENT AMERICAN HISTORY*. Spring term. Credit three hours. An intensive course for upperclassmen. M W F 12. Mr. GATES.

[728. *ECONOMIC HISTORY OF THE UNITED STATES*. Spring term. Credit three hours. Mr. GATES. Not offered in 1949-1950.]

811. *MODERNIZATION OF CHINA: 1842-1911*. Fall term. Credit two hours. Prerequisite History 162 or consent of the instructor. M 2-4. Mr. BIGGERSTAFF. Topical study of the impact of Western civilization upon traditional China.

812. *MODERNIZATION OF CHINA: SINCE 1911*. Spring term. Credit two hours. Prerequisite History 162 or consent of the instructor. M 2-4. Mr. BIGGERSTAFF. Topical study of changes in China since the Revolution of 1911.

911. *ORIGINS OF MODERN SCIENCE*. Fall term. Credit three hours. Prerequisite, History 165-166 or consent of the instructor. T Th 2-4. Mr. GUERLAC.

The evolution of some fundamental concepts of physical science studied through representative writings.

[913. *ORIGINS OF MODERN SCIENCE*. Fall term. Credit three hours. The development of biological thought. Alternates with History 911. T Th 2-4. Mr. GUERLAC. Not offered in 1949-1950.]

916. *SCIENCE AND THE CENTURY OF THE ENLIGHTENMENT*. Spring term. Credit three hours. M W F 9. Mr. GUERLAC.

The thought of the 18th century from Bayle and Fontenelle through the French Revolution, with special reference to the influence of scientific ideas.

DIVISION OF MODERN LANGUAGES

Mr. J. M. COWAN, *Director*; Messrs. F. B. AGARD, G. H. FAIRBANKS, R. A. HALL, JR., C. F. HOCKETT, W. G. MOULTON, H. E. SHADICK, and staff.

The system of course numbering is the same for all languages offered by the Division. Courses 101 and 102 in a given language aim at bringing the student to a level of achievement sufficient to enable him to pass the Proficiency Examination and thus fulfill the language requirement for graduation (see p. 18). Students who fail the Proficiency Examination after completion of course 102 may satisfy the language requirement for graduation by completing course 103, which is open only to such students. New students with previous language experience should take the Proficiency Examination upon or before entrance, (1) to determine whether or not their language competence is sufficient to satisfy the language requirement for graduation, (2) failing this, to determine their placement for further language work.

The Division offers major studies in Chinese Linguistics, French Linguistics, General Linguistics, German Linguistics, Russian Linguistics, and Spanish Linguistics. A major consists of (1) eighteen hours of courses in a given language (or in Linguistics) numbered above 199; (2) Linguistics 201-202; and (3) fifteen hours in related subjects, of which a minimum of six hours must be selected from courses numbered above 199 in the literature of that language (see announcements of Department of Far Eastern Studies, Department of German Literature, Department of Romance Literature, Department of Russian Literature).

ARABIC

101. *ELEMENTARY COLLOQUIAL ARABIC*. Fall term. Credit six hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. COWAN.

102. *ELEMENTARY COLLOQUIAL ARABIC*. Spring term. Credit six hours. Prerequisite, Arabic 101. Hours to be arranged. Mr. COWAN.

CHINESE

101. *ELEMENTARY COLLOQUIAL CHINESE*. Fall term. Credit six hours. T Th 9 and M T W Th F S 8.

102. *ELEMENTARY COLLOQUIAL CHINESE*. Spring term. Credit six hours. Prerequisite, Chinese 101. T Th 9 and M T W Th F S 8.

103. *ELEMENTARY COLLOQUIAL CHINESE*. Either term. Credit three hours. Open only to students with credit for Chinese 102 who have failed the Proficiency Examination. Hours to be arranged.

201. *INTRODUCTION TO LITERARY CHINESE*. Fall term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or Chinese 103. M W F 11. Mr. SHADICK.

203. *INTERMEDIATE COLLOQUIAL CHINESE*. Fall term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or Chinese 103. T Th S 11. Mr. HOCKETT.

205-206. *CHINESE CONVERSATION*. Throughout the year. Credit one hour a term. Prerequisite, Chinese 102 or 103. Hours to be arranged.

212. *INTERMEDIATE LITERARY CHINESE*. Spring term. Credit three hours. Prerequisite, Chinese 201. M W F 11. Mr. SHADICK.

214. *INTERMEDIATE COLLOQUIAL CHINESE*. Spring term. Credit three hours. Prerequisite, Chinese 203. T Th S 11. Mr. HOCKETT.

232. *THE LINGUISTIC STRUCTURE OF CHINESE*. Spring term of 1950 and alternate years. Credit three hours. Prerequisite, proficiency in Chinese or Linguistics 201. Hours to be arranged. Mr. HOCKETT.

The placement of Peiping Chinese among modern Chinese dialects; a study of the sounds, forms, and structure of Peiping Chinese; nature of the Chinese writing system in relation to the language; sociological and psychological aspects of Chinese linguistic structure. Lectures, discussion, and exercises.

ENGLISH LANGUAGE

102. *ENGLISH FOR FOREIGNERS*. Fall term. Credit six hours. Prerequisite, placement by the instructor. Hours to be arranged. Miss PARATORE.

201. *ENGLISH FOR FOREIGNERS*. Fall term. Credit six hours. Prerequisite, a satisfactory Proficiency Examination. M W 11 and T Th 2-4 plus two hours to be arranged. Miss PARATORE.

A course treating the special problems of students whose native language is not English.

FRENCH

101. *ELEMENTARY COURSE*. Either term. Credit six hours. Students who have previously studied any French must take the Proficiency Examination before registering for this course. Hours as assigned.

102. *ELEMENTARY COURSE*. Either term. Credit six hours. Prerequisite, French 101 or its equivalent. Students who have not completed French 101 (except those currently enrolled in French 101) must take the Proficiency Examination before registering for this course. Hours as assigned.

103. *ELEMENTARY COURSE*. Either term. Credit three hours. Open only to students with credit for French 102 who have failed the Proficiency Examination. M W F 10, T Th S 10.

201. *INTERMEDIATE READING COURSE*. Either term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or French 103. M W F 10, T Th S 10.

203. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Either term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or French 103. M W F 9 or 10, T Th S 9.

214. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Either term. Credit three hours. Prerequisite, French 203. M W F 1.

223. *ADVANCED COMPOSITION AND CONVERSATION*. Fall term. Credit three hours. Prerequisite, French 214. Hours to be arranged.

224. *ADVANCED COMPOSITION AND CONVERSATION*. Spring term. Credit three hours. Prerequisite, French 214. Hours to be arranged.

232. *THE LINGUISTIC STRUCTURE OF FRENCH*. Spring term of 1950 and alternate years. Credit three hours. Prerequisite, proficiency in French and Linguistics 201. M W F 2. Mr. HALL.

Descriptive study and analysis of French linguistic structure. French phonetics and phonemics: the sounds of French with special attention to contrast with English sounds; syllable-structure; stress and intonation. The forms and sequences of forms of the language, studied from the point of view of speech and of its written representation. The results of linguistic analysis contrasted with traditional grammatical description. Lectures, discussion, and exercises.

[241-242. *HISTORY OF THE FRENCH LANGUAGE*. Throughout the year. Offered in 1950-1951 and alternate years. Credit three hours a term. Prerequisite: proficiency in French. M W F 2. Mr. HALL.]

GERMAN

101. *ELEMENTARY COURSE*. Either term. Credit six hours. Students who have previously studied any German must take the Proficiency Examination before registering for this course. Hours as assigned.

102. *ELEMENTARY COURSE*. Either term. Credit six hours. Prerequisite, German 101 or its equivalent. Students who have not completed German 101 (except those currently enrolled in German 101) must take the Proficiency Examination before registering for this course. Hours as assigned.

103. *ELEMENTARY COURSE*. Either term. Credit three hours. Open only to students with credit for German 102 who have failed the Proficiency Examination. M W F 11.

105. *SCIENTIFIC READING*. Either term. Credit three hours. Prerequisite, German 102. M W F 9.

201. *INTERMEDIATE READING COURSE*. Either term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or German 103, or 105. M W F 11.

203. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Either term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or German 103, or 105. T Th S 11.

212. *INTERMEDIATE READING COURSE*. Either term. Credit three hours. Prerequisite, German 201, or 203. M W F 12.

214. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Either term. Credit three hours. Prerequisite, German 203. T Th S 9.

[232. *LINGUISTIC STRUCTURE OF GERMAN*. Spring term 1951 and alternate years. Credit three hours. Prerequisite, proficiency in German and Linguistics 201. T Th S 10. Mr. MOULTON.]

241. *HISTORY OF THE GERMAN LANGUAGE*. Fall term 1949 and alternate years. Credit three hours. Prerequisite, proficiency in German. T Th S 9. Mr. MOULTON.

The relationship of German to other Germanic and Indo-European languages. The development of High German from the earliest texts to modern times. The rise of the standard language; dialects. Analysis of changes in sounds and forms. Lectures, discussion, reading, and analysis of texts.

242. *MIDDLE HIGH GERMAN*. Spring term 1950 and alternate years. Credit three hours. Prerequisite, German 241 or German 281, 282. T Th S 9. Mr. MOULTON.

Reading, discussion, and analysis of the language in Middle High German texts.

[281-282. *GOTHIC AND COMPARATIVE GERMANIC LINGUISTICS*. Throughout the year, 1950-1951 and alternate years. Credit three hours a term. T Th S 9. Mr. MOULTON.]

ITALIAN

101. *ELEMENTARY COURSE*. Fall term. Credit six hours. T Th 10 and M T W Th F S 9 or 11.

102. *ELEMENTARY COURSE*. Spring term. Credit six hours. Prerequisite, Italian 101. T Th 10 and M T W Th F S 9 or 11.

103. *ELEMENTARY COURSE*. Either term. Credit three hours. Open only to students with credit for Italian 102 who have failed the Proficiency Examination. Hours to be arranged.

201. *INTERMEDIATE READING COURSE*. Fall term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or Italian 103. Hours to be arranged.

203. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Fall term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or Italian 103. Hours to be arranged.

214. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Spring term. Credit three hours. Prerequisite, Italian 203. Hours to be arranged.

LINGUISTICS

201-202. *INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE*. Throughout the year. Credit three hours a term. M W F 10. Mr. AGARD.

A basic introductory course designed to acquaint the student with the methods of systematic observation of language phenomena (linguistics). This course is required for all majors in the linguistics of a given language or in general linguistics (see p. 73); it is also a prerequisite, or a concurrent requirement, for Linguistic Analysis 203-204.

203-204. *LINGUISTIC ANALYSIS*. Throughout the year. Credit three hours a term. Prerequisite, Linguistics 201. M W F 9. Mr. HOCKETT.

A training course in the techniques of observation and analysis of descriptive linguistics. *Fall term*: phonetics and phonemics; *Spring term*: morphology and syntax.

[205. *FIELD METHODS*. Fall term 1950 and alternate years. Credit three hours. Prerequisite, 204. Hours to be arranged; four class hours a week may be required. Mr. HOCKETT.]

211-212. *ACCOUSTICAL PHONETICS*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. COWAN.

A rapid survey of the techniques of experimental articulatory phonetics; the speech mechanism as a sound generator; sound recording techniques, and the methods of general acoustics; application of acoustical analysis to the study of speech sounds. The course will require no mathematical training of the students beyond arithmetical computation; the necessary mathematical operations for acoustical analysis will be developed for the students by the instructor.

281-282. *THE COMPARATIVE STUDY OF ROMANCE LANGUAGES*. Throughout the year. Credit three hours a term. Hours to be arranged. Mr. HALL.

The family of Romance Languages; the application of the comparative method and the reconstruction of Proto-Romance speech. The relation between Proto-Romance and Old and Classical Latin. The history of the Romance Languages as a whole from Latin times to the present, and their inter-relationships. A survey of the accomplishments and approaches of recent work in Romance linguistics. Lectures, discussion, and exercises.

OLD ENGLISH PROSE AND POETRY. (See English 305-306).

ENGLISH PHONETICS. (See Speech and Drama 333).

PRINCIPLES OF PHONETICS. (See Speech and Drama 334).

REGIONAL PHONETICS. (See Speech and Drama 336).

HISTORY OF THE LATIN LANGUAGE. (See Classics 347).

VULGAR LATIN. (See Classics 348).

COMPARATIVE GRAMMAR OF GREEK AND LATIN. (See Classics 350).

ITALIC DIALECTS: OSCAN AND UMBRIAN. (See Classics 390).

OLD AND MIDDLE ENGLISH. (See English 605-606).

For other courses in the linguistics of specific languages see Chinese 232, French 232, 241, 242; German 232, 241, 242, 281; Russian 232, 241, 290; Spanish 232, 241, 242.

PORTUGUESE

101. *ELEMENTARY COURSE IN BRAZILIAN PORTUGUESE*. Fall term. Credit six hours. T Th 11 and M T W Th F S 12.

102. *ELEMENTARY COURSE IN BRAZILIAN PORTUGUESE*. Spring term. Credit six hours. Prerequisite, Portuguese 101. T Th 11 and M T W Th F S 12.

103. *ELEMENTARY COURSE IN BRAZILIAN PORTUGUESE*. Spring term. Credit three hours. Open only to students with credit for Portuguese 102 who have failed the Proficiency Examination. Hours to be arranged.

201. *INTERMEDIATE READING COURSE*. Fall term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or Portuguese 103. Hours to be arranged.

203. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Fall term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or Portuguese 103. Hours to be arranged.

214. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Spring term. Credit three hours. Prerequisite, Portuguese 203. Hours to be arranged.

RUSSIAN

101. *ELEMENTARY COURSE*. Fall term. Credit six hours. Hours as assigned.

102. *ELEMENTARY COURSE*. Spring term. Credit six hours. Prerequisite, Russian 101. Hours as assigned.

103. *ELEMENTARY COURSE*. Either term. Credit three hours. Open only to students with credit for Russian 102 who have failed the Proficiency Examination. Hours to be arranged.

201. *INTERMEDIATE READING COURSE*. Fall term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or Russian 103. M W F 11.

203. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Fall term. Credit three hours. Prerequisite, Russian 201 or concurrent registration in Russian 201. T Th S 11 and two hours to be arranged.

212. *INTERMEDIATE READING COURSE*. Spring term. Credit three hours. Prerequisite, Russian 201. M W F 11.

214. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Spring term. Credit three hours. Prerequisite, Russian 212 or concurrent registration in Russian 212. T Th S 11 and two hours to be arranged.

223. *ADVANCED COMPOSITION AND CONVERSATION*. Fall term. Credit three hours. Prerequisite, Russian 214. Hours to be arranged.

224. *ADVANCED COMPOSITION AND CONVERSATION*. Spring term. Credit three hours. Prerequisite, Russian 223. Hours to be arranged.

232. *THE LINGUISTIC STRUCTURE OF RUSSIAN*. Spring term. Credit three hours. Prerequisite, proficiency in Russian and Linguistics 201. M W F 2. Mr. FAIRBANKS.

A descriptive study and analysis of Russian linguistic structure. Russian phonetics, phonemics, morphology, and syntax.

241. *HISTORY OF THE RUSSIAN LANGUAGE*. Fall term. Credit three hours. Prerequisite, proficiency in Russian. M W F 2. Mr. FAIRBANKS.

The study of the divisions of the Russian language chronologically and geographically; the relationships of the Russian language, the Slavic group, the Indo-European group; the changes in the sounds and forms of the Russian language; vocabulary borrowings from Eastern and Western languages.

SPANISH

101. *ELEMENTARY COURSE*. Either term. Credit six hours. Students who have previously studied any Spanish must take the Proficiency Examination before registering for this course. Hours as assigned.

102. *ELEMENTARY COURSE*. Either term. Credit six hours. Prerequisite, Spanish 101 or its equivalent. Students who have not completed Spanish 101 (except those currently enrolled in Spanish 101) must take the Proficiency Examination before registering for this course. Hours as assigned.

103. *ELEMENTARY COURSE*. Either term. Credit three hours. Open only to students with credit for Spanish 102 who have failed the Proficiency Examination. T Th S 9.

201. *INTERMEDIATE READING COURSE*. Either term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or Spanish 103. T Th S 9.

203. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Either term. Credit three hours. Prerequisite, a satisfactory Proficiency Examination, or Spanish 103. M W F 9 or 11, T Th S 11.

214. *INTERMEDIATE COMPOSITION AND CONVERSATION*. Either term. Credit three hours. Prerequisite, Spanish 203. M W F 2.

224. *ADVANCED COMPOSITION AND CONVERSATION*. Spring term. Credit three hours. Prerequisite, Spanish 214. Hours to be arranged.

232. *THE LINGUISTIC STRUCTURE OF SPANISH*. Spring term of 1950 and alternate years. Credit three hours. Prerequisite, proficiency in Spanish and Linguistics 201. M W F 1. Mr. AGARD.

Descriptive study and analysis of Spanish linguistic structure. Spanish phonetics and phonemics: the sounds of Spanish with special attention to contrast with English sounds; syllable structure; stress and intonation. The forms and sequences of forms of the language, studied from the point of view of speech and of its written representation. The results of linguistic analysis contrasted with traditional grammatical description. Lectures, discussion, and exercises.

[241-242. *HISTORY OF THE SPANISH LANGUAGE*. Throughout the year. Offered in 1950-1951 and alternate years. Credit three hours a term. Prerequisite; proficiency in Spanish. M W F 1. Mr. AGARD.]

DIVISION OF LITERATURE

Mr. DAVID DAICHES, *Acting Chairman*; Messrs. M. H. ABRAMS, H. D. ALBRIGHT, R. C. BALD, MORRIS BISHOP, HARRY CAPLAN, DAVID DAICHES, G. I. DALE, A. M. DRUMMOND, F. B. FREEMAN, W. H. FRENCH, BAXTER HATHAWAY, G. H. HEALEY, JAMES HUTTON, C. W. JONES, E. KAHLER, G. M. KIRKWOOD, VICTOR LANGE, F. MINEKA, H. A. MYERS, V. NABOKOV, EDWIN NUNGEZER, W. F. OECHLER, B. L. RIDEOUT, W. M. SALE, JR., H. E. SHADICK, FRIEDRICH SOLMSEN, M. W. STEARNS, C. K. THOMAS, H. W. THOMPSON, C. I. WEIR, JR., H. A. WICHELS.

Students electing the ordinary major in Literature will choose one of the following alternatives: Alternative A. 1. Advanced courses in one national literature, observing approximately the departmental rules for a major (twenty-four hours); 2. In divisional courses (twelve hours); 3. In related subjects: European or appropriate national history (six hours), History of Philosophy or of Philosophical Ideas, or Foundations of Western Thought (six hours), Bible or Classics, whether in translation or in the original (six hours). Alternative B. 1. Advanced courses in one national literature (eighteen hours); 2. In a second literature (Greek 101-203 inclusive, Chinese 201-212 acceptable) (twelve hours); 3. In divisional courses (twelve hours); 4. In related subjects, two of the three groups as stated under Alternative A, 3.

Honors Program. Open to major students especially recommended by advisers or instructors of Literature 101-102. Courses required of candidates: a national literature (eighteen hours); a second literature (twelve hours); in the division (twelve hours); in related subjects: two of the three groups, as stated under A, 3 above (twelve hours). In addition there will be twelve hours of tutorial work leading to a comprehensive examination. Honors will be granted on the basis of the student's general achievement, with special emphasis on his work in the major subject, tutorials, and comprehensive examinations.

For listings of other courses in literature see the announcements of the following Departments: Classics, English, Far Eastern Studies, German Literature, Romance Literature, and Speech and Drama.

101-102. *INTRODUCTION TO LITERATURE.* Throughout the year. Credit three hours a term. First term prerequisite to the second. For freshmen and sophomores. M W F 9, 10, 12 or 2; T Th S 9, 10. Messrs. DAICHES, LANGE, and others.

A study of narrative prose, drama, and poetry selected from the literature of the world. The purpose of the course is to quicken appreciation of literary values by the analysis of the content and form of masterpieces.

101 will also be offered in the Spring term, only for freshmen exempted from English 112. No others will be admitted. Mr. SALE. Hours for 101, Spring term. M W F 12, T Th S 10. 102 will be offered M W F 12 in the Fall term only for those students who had 101 in the Spring term of 1949.

201-202. *ENGLISH TRANSLATIONS OF GREEK AND LATIN CLASSICS.* Throughout the year. Credit three hours a term. First term prerequisite to the second. Open to sophomores and upperclassmen. T 2-4 or Th 2-4; and an hour to be arranged. Mr. HUTTON.

Rapid reading in the best translations with emphasis upon Greek masterpieces; for example, the Iliad and the Odyssey, the tragedies of Sophocles, and several dialogues of Plato. Translations from the Latin will be chosen for the bearing of the original works upon modern literature.

211-212. *SURVEY OF MEDIEVAL LITERATURE*. Throughout the year. Credit three hours a term. First term prerequisite to the second. T Th S 9. Mr. C. W. JONES.

European literature from the fourth to the fifteenth centuries studied in English translations. First term: Early Christian, Irish, Old English, and late Latin literature: saints' lives, Arthurian and Nibelung stories, lyrics, liturgy, and drama. Second term: Romance literature: troubadour lyrics, chansons, romances, fabliaux, ballads; Dante's *Comedy* and other writings.

214. *HUMANISM AND THE RENAISSANCE*. Spring term. Credit three hours. Primarily for upperclassmen. M W F 10. Mr. HUTTON.

Readings, in translation, from Petrarch, Erasmus, Ficino, Machiavelli, and others, designed to bring out typical ideas and attitudes of the Renaissance period.

301-302. *DRAMA AND THE THEATRE*. Throughout the year. Credit three hours a term. M W F 10. Messrs. ALBRIGHT, DRUMMOND, and MYERS.

An introduction to representative types and forms of drama as interpreted in the theatre, designed to increase appreciation of the drama as literature and of the theatre as art-form and social institution. The development of dramatic literature, the distinguishing qualities of its chief types (tragedy, comedy, melodrama, farce), and the basic principles of dramaturgy will be illustrated by ancient and modern plays. This survey will be paralleled by tracing the development of the physical stage, and of the changing theories and techniques of theatrical production in the important stylistic periods from the Greeks to the present.

MASTERS OF GERMAN LITERATURE. (See German Literature 151-152.)

MASTERS OF RUSSIAN LITERATURE. (See Russian Literature 151-152.)

311-312. *EUROPEAN FICTION*. Throughout the year. Credit three hours a term. M W F 12. Mr. WEIR.

Selected English, French, German, and Russian novels of the eighteenth and nineteenth centuries will be read. Special attention will be paid to the transmission of ideas and the development of trends in European fiction. All foreign novels will be read in English translation.

321-322. *CHINESE LITERATURE IN TRANSLATION*. Throughout the year. Credit three hours a term. M W F 10. Mr. SHADICK.

Fall term: Philosophical and historical literature, including Confucian, Taoist, and Buddhist writings. Spring term: Imaginative literature, including poetry, classical prose, fiction, drama, and the new writing of the twentieth century. Prerequisite: Literature 321, Far Eastern Studies 201, or History 161.

401-402. *PRINCIPLES OF LITERARY CRITICISM*. Throughout the year. Credit three hours a term. Fall term, M 2-4 or W 2-4, Mr. CAPLAN. Spring term, M W F 2, Mr. DAICHES.

Theories of literary art. In the fall term, consideration will be given to Greek and Roman criticism; in the spring term, to criticism from the Renaissance to the present day.

[411. *THE PSYCHOLOGY OF LITERATURE*. Spring term. Given every second year. Not given in 1949-1950.]

421. *MODERN LITERARY CRITICISM*. Spring term. Credit three hours. Prerequisite, consent of the instructor. M W F 12. Mr. SALE.

A study of modern critical opinions and their bearing on the practice of literary criticism. Writing of a critical nature will accompany the study.

MATHEMATICS

Mr. R. P. AGNEW, *Chairman*; Messrs. K. L. CHUNG, M. D. DONSKER, WILLIAM FELLER, W. A. HURWITZ, MARK KAC, HARRY POLLARD, J. B. ROSSER, BRYANT TUCKERMAN, R. J. WALKER, Miss C. S. WILLIAMS, BERTRAM YOOD.

For a major in Mathematics, the following courses must be completed: (1) in Mathematics, at least fifteen hours of courses numbered above 201; (2) in related subjects, at least fifteen hours to be selected from approved courses in Astronomy, Chemistry, Economics, Education, French, Geology, German, Italian, Philosophy, Physics, and Russian.

Students planning to teach mathematics in secondary schools should make themselves familiar with the New York State requirements. They should bear in mind that the teaching of mathematics is frequently combined with teaching of physical science or general science. The Department of Mathematics recommends, as minimum preparation for teaching the subject, Mathematics 171, 172, and six additional hours selected from the following list: Mathematics 173, 201, 341, 401, 501. Students planning to teach primarily mathematics should meet the requirements for a major in the subject.

Students wishing to take any of the courses numbered above 173 are invited to confer, before registering, with instructor concerned.

Of courses 111 to 173, not more than six hours may be taken simultaneously without the special permission of the Department.

111. BASIC MATHEMATICS. Either term. Three hours a week, one hour credit. Times to be announced later.

A review course in arithmetic and algebra, for those freshmen who have not passed the proficiency examination in the subjects, or who wish a refresher course before taking College Algebra, Trigonometry, or Calculus.

121-122. ELEMENTARY CONCEPTS OF MATHEMATICS. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 111 or the equivalent. T Th S 11.

This course is intended mainly for students who are not planning to continue the study of mathematics. Primary emphasis will be placed on the fundamental ideas common to all mathematics rather than on the technique of any one part of the subject. The student will be encouraged to apply the logical processes of mathematics to problems arising in everyday experience. Extensive skill in the manipulation of mathematical symbols will not be emphasized. Although this course is not designed to satisfy prerequisites for courses in Analytic Geometry and Calculus, a student who has passed it with a sufficiently high grade may be admitted to such courses.

129. SOLID GEOMETRY. Either term. Credit three hours, except for students offering Solid Geometry for entrance. Prerequisite, Plane Geometry. T Th S 10.

131. COLLEGE ALGEBRA. Either term. Credit three hours. This course is not intended as preparation for Calculus nor as a refresher course for students who are weak in Algebra. Students without thorough preparation in Intermediate Algebra are advised to take Mathematics 111. Prerequisite, Intermediate Algebra. First term. M W F 9, T Th S 10. Second Term. M W F 10, T Th S 9.

133. PLANE TRIGONOMETRY. Either term. Credit three hours except for students offering Trigonometry for entrance. Students without thorough preparation in Intermediate Algebra are advised to take Mathematics 111 before taking Mathematics 133.

Prerequisite, Plane Geometry and Intermediate Algebra. First term. M W F 10, T Th S 9. Second term. M W F 9, T Th S 10.

153-154. *MATHEMATICS FOR SOCIAL AND BIOLOGICAL SCIENCES*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 111, or the equivalent. T Th S 9.

Covers those parts of analytic geometry and calculus which are of greatest importance in statistics and various applications in economics, sociology, psychology, biology, etc. Emphasis is on conceptual understanding. This course is not intended to satisfy prerequisites for courses in Mathematics, Physics, Chemistry, Architecture, or Engineering. Mathematics 154 will serve as prerequisite for Mathematics 711.

161-162-163. *ANALYTIC GEOMETRY AND CALCULUS*. Three terms; each course is offered each term. Credit three hours a term. Primarily for students in the College of Engineering; the prerequisites for such students are Mathematics 133 and Mathematics 129 or 131, or the equivalent. For students in the College of Arts and Sciences, the prerequisites for Mathematics 161 are the same as those stated below for Mathematics 171. Times to be announced later.

171-172-173. *ANALYTIC GEOMETRY AND CALCULUS*. Three terms; each course is offered each term. Credit three hours a term. Primarily for students in the College of Arts and Sciences. Prerequisite, Mathematics 133, or the equivalent, and a thorough preparation in Intermediate Algebra. Students without thorough preparation in Intermediate Algebra are advised to take Mathematics 111 before taking Mathematics 171. Some students interested in Mathematics or allied subjects will be expected to take 171, 172, and 173. Times to be announced later.

201. *ELEMENTARY DIFFERENTIAL EQUATIONS*. Either term. Credit three hours. Prerequisite, Mathematics 173, or the equivalent. Times to be announced later.

221. *TEACHERS' COURSE*. Spring term. Credit three hours. Prerequisite, Mathematics 172 or the equivalent. M W F 11.

This course will treat certain selected topics in the mathematics taught in the secondary schools with a view to contribute to the enrichment of such teaching, and to give a clearer understanding of the meanings of certain of the concepts and processes involved.

301. *DETERMINANTS AND MATRICES*. Spring term. Credit three hours. Prerequisite, Mathematics 173 or the equivalent. T Th S 9.

Primarily for undergraduates. A treatment of such topics as determinants, matrices, linear dependence, linear equations and linear transformations, numerical methods of computation and reduction by means of orthogonal transformations.

341. *THEORY OF NUMBERS*. Fall term. Credit three hours. Prerequisite, Mathematics 172 or the equivalent. T Th S 9.

Primarily for undergraduates. A study of properties of divisibility, linear and quadratic congruences, primitive roots, quadratic residues, and other topics.

371, 372. *MODERN ALGEBRA*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 173 or the equivalent. T Th S 9. Mr POLLARD.

For graduate students and qualified undergraduates. An introductory course in modern algebra, serving as a basis for further work in algebra and geometry.

373. *ADVANCED THEORY OF FIELDS*. Fall term. Credit three hours. Prerequisite, Mathematics 372. T Th S 9. Miss WILLIAMS.

A study of finite and infinite extensions of fields. Galois theory and application of Galois theory.

374. *ADVANCED THEORY OF RINGS*. Spring term. Credit three hours. Prerequisite, Mathematics 372. T Th S 9. Miss WILLIAMS.

The course will start with a development of general structure theorems for rings. A study will be made of the radical, semisimple, and simple rings. Applications to the theory of algebras.

401-402. *PROJECTIVE GEOMETRY*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 172 or the equivalent. M W F 9.

Primarily for undergraduates. A first course in projective geometry, including both synthetic and analytic methods.

409. *ELEMENTARY TOPOLOGY*. Spring term. Credit three hours. Prerequisite, Mathematics 173. M W F 9. Mr. TUCKERMAN.

Primarily for undergraduates. Introductory topology in 1, 2 and 3 dimensions. Typical subjects: networks, 2-dimensional manifolds, four-color problem, knots, homology theory.

451-452. *ALGEBRAIC GEOMETRY*. Throughout the year. Credit three hours a term. Prerequisite, consent of the teacher. M W F 9. Mr. WALKER.

For graduate students and qualified undergraduates. An introductory course in the modern theory of curves, surfaces, and higher dimensional figures defined by algebraic equations.

501-502. *ADVANCED CALCULUS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 173, or the equivalent. M W F 11.

A careful study of limits, continuity, derivatives, and Riemann integrals. Functions of several variables. Multiple and line integrals. The course is designed to furnish necessary preparation for advanced work in analysis and applied mathematics. Emphasis is placed on the logical development of the calculus, rather than on a wide range of formal applications.

515-516. *FUNCTIONAL ANALYSIS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 512. T Th S 10. Mr. YOOD.

Banach spaces, Banach algebras and related topics in the theory of abstract spaces. Applications to problems in analysis are considered.

531-532. *COMPLEX VARIABLES*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 502. M W F 10.

For graduate students and qualified undergraduates. Complex number system; the elementary functions, complex differentiation, and integration; Cauchy's theorem; Taylor's series; singularities; conformal mapping; Riemann surfaces; Fourier and Laplace transformations; differential and integral equations. Applications.

549. *SEQUENCES AND SERIES*. Spring term. Credit three hours. Prerequisite, Mathematics 173 or the equivalent. M W F 10. Mr. HURWITZ.

Primarily for undergraduates. Tests for convergence and divergence; algebraic and analytic properties of series; summable series; applications.

561. *INTEGRAL EQUATIONS*. Fall term. Credit three hours. Prerequisite, Mathematics 502. T Th S 11. Mr. HURWITZ.

For graduate students and advanced undergraduates. Volterra and Fredholm in-

tegral equations. The Hilbert-Schmidt theory. Special integral equations occurring in applied mathematics.

605. *NUMERICAL AND GRAPHICAL METHODS*. Fall term. Credit three hours. Prerequisite, Mathematics 201 or the equivalent. M W F 11. Mr. TUCKERMAN.

Primarily for undergraduates. Processes useful in solving problems of engineering, physics, chemistry, etc. Nomograms, interpolation, numerical integration, Fourier series, numerical solution of algebraic, transcendental, and ordinary and partial differential equations.

607. *APPLIED MATHEMATICS FOR ELECTRICAL ENGINEERS*. Spring term. Credit three hours. Prerequisite, Mathematics 163 or the equivalent.

Complex numbers, determinants, Fourier series, solution of algebraic and transcendental equations, vector algebra, theory of errors, and dimensional analysis. Times to be announced.

608. *DIFFERENTIAL EQUATIONS FOR ELECTRICAL ENGINEERS*. Fall term. Credit three hours. Prerequisite, Mathematics 607.

A course in ordinary differential equations with special emphasis on problems of electrical engineering. Times to be announced.

611-612. *HIGHER CALCULUS FOR ENGINEERS AND PHYSICISTS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 201 or the equivalent. T Th S 10. Mr. POLLARD.

Infinite series, partial differentiation, multiple and line integrals, Fourier series, partial differential equations, vector analysis, complex variables, orthogonal expansions, calculus of variations, Laplace and Fourier transforms with applications. Emphasis is placed on a wide range of formal applications of the calculus, rather than on the logical development. The second term will be accepted as prerequisite to Complex Variables.

621-622. *MATHEMATICAL METHODS IN PHYSICS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 201, or the equivalent, and at least two years of general physics. M W F 12. Mr. KAC.

Lectures and problem work designed to give the students a working knowledge of the principal mathematical methods used in advanced physics.

681-682. *DIFFERENTIAL EQUATIONS OF MATHEMATICAL PHYSICS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 502. M W F 11. Mr. AGNEW.

For graduate students and qualified undergraduates. The derivation of the differential equations, with appropriate boundary conditions, which arise in certain problems of mathematical physics; the mathematical properties of solutions, and the physical meanings of these properties.

711-712. *ELEMENTARY MATHEMATICAL STATISTICS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 154 or 173 or the equivalent. T Th S 11.

Primarily for undergraduates. An introduction to the elements of theoretical statistics, in particular to statistical inference.

715-716. *ADVANCED MATHEMATICAL STATISTICS*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 712. M W F 9.

Mathematical methods of statistics with special reference to statistical inference,

estimation, and sequential analysis. Elements of probability theory, and elementary statistical notions and techniques are absolute prerequisites.

721-722. *ELEMENTARY PROBABILITY*. Throughout the year. Credit three hours a term. Prerequisite, Mathematics 173 or the equivalent. T Th S 10.

Random variables and their distribution functions. Characteristic functions. The central limit theorem. Random walk problems. Markov chains. Theory of Brownian motion and other applications to physics.

723-724. *ADVANCED PROBABILITY*. Throughout the year. Credit three hours a term. Prerequisite, consent of the teacher. T Th S 11. Mr. KAC.

For graduate students and qualified advanced undergraduates. Selected topics of the advanced theory of probability.

READING, RESEARCH, AND INFORMAL STUDY

For properly qualified students, members of the Department will direct reading and research not necessarily associated with any course.

031. *READING IN ALGEBRA*.

041. *READING IN GEOMETRY*.

051. *READING IN ANALYSIS*.

061. *READING IN APPLIED MATHEMATICS*.

071. *READING IN PROBABILITY AND STATISTICS*.

MUSIC

Mr. DONALD J. GROUT, *Chairman*; Messrs. WILLIAM AUSTIN, WILLIAM CAMPBELL, ROBERT HULL, HUNTER JOHNSON, JOHN KIRKPATRICK, ROBERT PALMER, and Miss MARGARET SQUIRE.

For a major in music, the following must be completed: (1) (a) four hours in Music 401, 402, and (b) Music 101, 102; 201, 202; 301, 302; 319, 320; and (c) six hours from Music 303 through 312; (2) in related subjects, a minimum of fifteen hours to be chosen with the approval of the adviser; (3) at least two years' membership and participation in either the University Orchestra, the Sage Chapel Choir, the Cornell A Cappella Chorus, or the Concert Band.

Students who are considering music as a possible major field should consult the chairman of the Department at the beginning of their freshman year or as soon thereafter as possible.

A large collection of recorded music and scores is housed in the Music Building at 320 Wait Avenue, where a number of phonograph listening rooms are available. These facilities may be used by any member of the student body at hours to be announced each term.

Choral and instrumental ensembles are trained and directed by members of the departmental staff each term, and all students who are interested are invited to join these groups. These ensembles include the Sage Chapel Choir, the Cornell A Cappella Chorus, the Bands, the Orchestra, and Chamber Music Groups. Announcements of tryouts will be made at the beginning of each term. For rehearsal hours, see the hours listed for Music 405 through 412.

MUSIC THEORY

103-104. *THEORY I: THE FUNDAMENTALS OF MUSIC*. Throughout the year. Credit three hours a term. M through F 9. Messrs. CAMPBELL and JOHNSON.

A study of the fundamentals of music through ear training, use of the keyboard, and

simple part writing. Includes scales, triads, intervals, and keys; rhythmic, harmonic, and melodic dictation; sight-singing; writing of melody and simple four-part harmony.

Section 1 is for music majors and qualified non-majors.

Section 2 is for the general student. Auditions will determine the section in which the student is to be placed.

201-202. *THEORY II: HARMONY*. Throughout the year. Credit three hours a term. Prerequisite, Music 103-104, or the equivalent. M W F 10 and Th 2. Mr. JOHNSON.

A study of harmonic principles of the period of common practice (1700-1900). The materials and techniques of the period will be practiced through writing, hearing, analysis, playing, and composition in the simpler homophonic forms. Advanced dictation, sight-singing, and keyboard harmony.

203-204. *THEORY III: COUNTERPOINT*. Throughout the year. Credit three hours a term. Prerequisite, Music 201-202, or the equivalent. M W F 12. Mr. PALMER.

The general principles of counterpoint will be studied by examining the contrapuntal practice of the Baroque period as exemplified chiefly in the works of J. S. Bach. There will be analysis and composition in the polyphonic forms of the period.

205-206. *THEORY IV: ANALYTIC TECHNIQUE*. Throughout the year. Credit three hours a term. Prerequisite, Music 203-204, or the equivalent. Hours to be arranged. Mr. PALMER.

This course is designed to develop a technique of analysis applicable to the music of any period. Examples from various periods in the history of music will be intensively studied, and the growth of the important structural principles underlying Western music will be traced.

207-208. *ORCHESTRATION AND CONDUCTING*. Throughout the year. Credit three hours a term. Prerequisites, Music 101-102 and 103-104, or the equivalents. M W F 2. Messrs. CAMPBELL and JOHNSON.

A study of the instruments of the orchestra and their use in representative works from 1700 to the present. Scoring for various instrumental groups, including large orchestra. The fundamentals of score reading and conducting. Qualified students will be given opportunity to practice with university musical organizations.

209-210. *COMPOSITION IN TWENTIETH CENTURY STYLE*. Throughout the year. Credit two hours a term. Hours to be arranged. Prerequisite, Music 203-204. (Music 203-204 may be taken concurrently with Music 209-210). Mr. JOHNSON.

The study of twentieth century harmonic and contrapuntal techniques and their application in original composition.

021-022. *INFORMAL STUDY*. Credit hours to be arranged. Mr. PALMER.

023-024. *INFORMAL STUDY*. Credit hours to be arranged. Mr. HULL.

MUSIC HISTORY

101. *THE ART OF MUSIC*. Either term. Credit three hours. Open to all students. Fall term, M W F 11. Spring term, M W F 12. Mr. AUSTIN.

102. *THE ART OF MUSIC*. Spring term. Credit three hours. Prerequisite Music 101. M W F 11. Mr. AUSTIN.

An approach to the understanding and rational enjoyment of the art of music, of-

ferred especially for students who have had no technical training in the subject. Students who are considering music as a possible major field should register for this course in their freshman year. The first term covers a study of the elements of music, the media of musical expression, and musical forms. The second term covers a study of the work of representative composers in relation to their social and artistic environment. Most of the outside work in this course consists of attending concerts and studying phonograph records.

301-302. *HISTORY OF MUSIC*. Throughout the year. Credit three hours a term. Prerequisites, Music 101-102 and Music 201-202 (the latter may be taken concurrently with Music 301-302). M W F 9. Mr. GROUT.

The development of the art of music from the Middle Ages to the present, with a study of compositions representative of the principal styles.

[303-304. *MUSIC OF THE RENAISSANCE*. Throughout the year. Credit three hours a term. Prerequisites, Music 201-202 and 301-302. M W F 10. Mr. GROUT. Not offered in 1949-1950.]

[305-306. *MUSIC OF THE BAROQUE PERIOD*. Throughout the year. Credit three hours a term. Prerequisites, Music 201-202 and 301-302. M W F 10. Mr. GROUT. Not offered in 1949-1950.]

[307-308. *MUSIC OF THE CLASSICAL PERIOD*. Throughout the year. Credit three hours a term. Prerequisites, Music 101-102 and 301-302. M W F 10. Mr. GROUT. Not offered in 1949-1950.]

311. *CONTEMPORARY MUSIC*. Fall term. Credit three hours. Prerequisites, Music 301-302 and Music 203-204. (The latter may be taken concurrently with Music 311). M W F 11. Mr. PALMER.

A study of the beginnings, development and current directions in the music of Europe from the mid-nineteenth century to the present. Representative works by significant composers will be examined through analyses and recordings. Considerable importance will be given to the relationships between music and developments in other fields.

312. *CONTEMPORARY MUSIC*. Spring term. Credit three hours. Prerequisite, Music 311. M W F 11. Mr. PALMER.

A study similar to Music 311 with particular reference to American music as an aspect of the wider development of the arts in North America. Representative composers' work will be examined and current trends discussed.

[313. *PIANO MUSIC*. Spring term. Credit three hours. Prerequisite, Music 101-102, or the equivalent. M W F 11. Mr. KIRKPATRICK. Not offered in 1949-1950.]

319-320. *COLLEGIUM MUSICUM*. Throughout the year. Credit two hours a term. Prerequisites, Music 101-102 or Music 103-104, and consent of the instructor. Required of all music majors for at least two years, usually in the junior and senior year. A student may register for this course in successive years but may not receive more than eight hours credit for this course. T 2-4:40. Mr. HULL, assisted by members of the Department.

A study of selected works from all periods in the history of music through analysis, editing, conducting, and performing. Each member of the class will be assigned specific research problems which will be the basis of performances and discussions during the laboratory section of the regular class period. The techniques and objec-

tives will be the same each year, but the materials covered will not be the same in any two successive years.

031-032. *INFORMAL STUDY*. Credit hours to be arranged. Mr. AUSTIN.

033-034. *INFORMAL STUDY*. Credit hours to be arranged. Mr. GROUT.

041-042. *INFORMAL STUDY*. Credit hours to be arranged. Mr. KIRKPATRICK.

APPLIED MUSIC

401-402. *INDIVIDUAL INSTRUCTION IN VOICE; ORGAN; PIANO; STRING, WOODWIND, AND BRASS INSTRUMENTS*. Throughout the year. Each course, for two half-hour lessons a week, carries two hours' credit a term, provided that the student shall have earned double that number of credits in music courses other than those in the 400 category. A student may register for this course in successive years. Open to all students by permission of the instructor. Students should consult the instructor at the beginning of each term as to hours for instruction, and the secretary of the Department as to hours for use of practice rooms. Messrs. AUSTIN, CAMPBELL, HULL, KIRKPATRICK, Miss SQUIRE, Mr. ———.

For violin and viola instruction with Mr. HULL, for piano instruction with Miss SQUIRE, for instruction in woodwind and brass instruments with Mr. CAMPBELL, and for organ instruction with Mr. AUSTIN, there is a fee of \$50 for one half-hour lesson a week each term. For piano instruction with Mr. KIRKPATRICK, there is a fee of \$50 for one half-hour lesson a week each term. A fee of \$7.50 a term is charged for a daily one-hour assignment to a practice room equipped with a piano. A fee of \$30 a term is charged for a daily one-hour assignment for the use of a pipe organ in Bailey Hall or Barnes Hall.

MUSICAL ORGANIZATIONS AND ENSEMBLES

Throughout the year. Credit one hour for two terms. Students desiring credit for work in these courses should register informally with the music department in the Fall term, and register formally in College for the appropriate course in the Spring term. Registration is permitted in two of these courses simultaneously, and students may register in successive years, but no student may earn more than four half hours of credit in these courses.

406. *THE SAGE CHAPEL CHOIR*. T 7-8 P.M. and Th 7:30-9 P.M. Mr. GROUT.

408. *THE CORNELL A CAPPELLA CHORUS*. M W 4:30-5:30 P.M. Mr. HULL.

410. *UNIVERSITY ORCHESTRA*. T 7-8 P.M., strings only, and W 7:30-9:30 P.M., full orchestra. Mr. HULL.

412. *UNIVERSITY CONCERT BAND*. Th 7:30-9:30 P.M. and F 4:30-6 P.M. Mr. CAMPBELL.

COURSES PRIMARILY FOR GRADUATES

275-276. *SEMINAR IN COMPOSITION*. Throughout the year. Credit two hours a term. Open to seniors by permission. Hours to be arranged. Mr. PALMER.

The work is intended to make the student acquainted with compositional practices in contemporary styles and to develop the student's creative abilities.

375-376. *INTRODUCTION TO RESEARCH*. Throughout the year. Credit two hours a term. Prerequisites, a reading knowledge of French and German and an elementary knowledge of music theory and general music history. Open to seniors by permission. Hours to be arranged. Mr. GROUT.

The basic materials and techniques of musicological research.

377-378. *SEMINAR IN MUSICOLOGY*. Throughout the year. Credit two hours a term. Hours to be arranged. Mr. GROUT.

This course is primarily for graduates (and, by permission, seniors) who have (1) the requisite knowledge of one or more of the important foreign languages, (2) a fair knowledge of music theory, and (3) some skill in applied music and score reading. The topic for the seminar in 1949-1950 is "Studies in the Mass and Motet of the Early Sixteenth Century."

PHILOSOPHY

Mr. ARTHUR E. MURPHY, *Chairman*; Messrs. MAX BLACK, S. M. BROWN, E. A. BURTT, NORMAN MALCOLM, HAROLD R. SMART, GREGORY VLASTOS.

For a major in Philosophy, the standard requirement is as follows: (1) in Philosophy twenty-one hours, including Philosophy 301-302 and one advanced course, all to be chosen with the approval of the student's adviser; (2) in related subjects, eighteen hours, to be chosen with the approval of the adviser. This requirement, however, will be diminished by six hours to allow for a final comprehensive examination, if the student elects to take such an examination. The courses thus to be omitted will be determined by the adviser. The major may emphasize aesthetics, social studies, history, logic, or religion. In each case an integrated program of studies must be selected, subject to the approval of the adviser. Informal Study is open to qualified majors.

Students registered in the combined Arts-Law course with a major in Philosophy will be required to complete twelve hours in Philosophy, including Philosophy 301-302, and nine hours in related subjects.

101. *PHILOSOPHICAL CLASSICS*. Either term. Credit three hours. Open to freshmen. Fall term: M W F 8 or 11, T Th S 9 or 11. Spring term: M W F 9, 11 or 12. Messrs. BURTT, BROWN, MALCOLM, SMART and ———.

A careful study of three Socratic dialogues, Plato's *Republic*, and J. S. Mill's *Utilitarianism* and *On Liberty*. In studying Plato and Mill, special attention is paid to the philosophy of democracy.

102. *PHILOSOPHICAL CLASSICS: SECOND COURSE*. Either term. Credit three hours. Prerequisite, Philosophy 101. Fall term: M W F 2. Spring term: M W F 8, T Th S 9. Messrs. BROWN and MALCOLM.

In classical texts of somewhat greater difficulty than those examined in Philosophy 101, the student is offered a choice between two sets of selected readings. Fall term: Descartes, Berkeley, and Hume, with an emphasis upon the problems in theory of knowledge. Spring term: Hobbes, Locke, and Hume, with an emphasis upon the problems in ethical and social values. No student may elect both terms.

103. *ELEMENTARY LOGIC*. Either term. Credit three hours. Open to freshmen. Fall term: M W F 12, T Th S 9 or 12. Spring term: M W F 2 or 3, T Th S 10 or 12. Messrs. BLACK, MALCOLM, ———, ———.

An elementary study of valid inference, inductive methods, and the causes of fallacy.

202. *ELEMENTARY SEMANTICS*. Fall term. Credit three hours. Open to sophomores and upperclassmen. M W F 3. Mr. BLACK.

A survey of what is reliably known about the philosophy of language and symbolism, with detailed practice in interpretation. Topics include: sign-using behavior, the nature of language, special types of discourse (scientific, poetic, mathematical, propagandistic), semantic fallacies. Lectures and discussion.

221-222. *ETHICS*. Throughout the year. Credit three hours a term. First term prerequisite to the second. Open to sophomores and upperclassmen. First term: Lectures M W 11, Recitation Th F S 11; second term M W F 11. Mr. BROWN.

Fall term: Basic moral ideas of Western civilization as interpreted by its major philosophers; Greek and Christian Ethics; the rise of modern liberalism, contemporary issues. Spring term: The meaning and tests of value judgments; the structure, conditions, and ends of a moral community; application to current social problems.

230. *AESTHETICS: PHILOSOPHY OF ART*. Spring term. Credit three hours. Open to students majoring in Philosophy or in Fine Arts, and to others by consent of the instructor. M W F 9. Mr. SMART.

A critical study of certain outstanding theories of art, ancient, modern, and contemporary.

COURSES FOR UPPERCLASSMEN AND GRADUATES

301-302. *HISTORY OF PHILOSOPHY*. Throughout the year. Credit three hours a term. Open to juniors and seniors, and others with the consent of the instructor. T Th S 9. Mr. VLASTOS.

Occidental philosophical thought from its Greek origins to the nineteenth century; the most important systems in their cultural context and in their application to social, religious, and educational problems. Fall term: Ancient and Medieval period. Spring term: Modern period.

312. *PHILOSOPHY IN CONTEMPORARY THOUGHT*. Spring term. Credit three hours. Prerequisite, six hours of Philosophy, or consent of the instructor. M W F 10. Mr. MURPHY.

Main tendencies in recent analytic and speculative philosophy in their relation to current literature, politics, theology, and philosophy of history.

313. *AMERICAN PHILOSOPHY*. Fall term. Credit three hours. Open to juniors and seniors. M W F 10. Mr. MURPHY.

The development of American thought from Jonathan Edwards to the present. Puritanism, the Enlightenment, transcendentalism, evolutionary science and religion, the philosophies of Royce, James, Santayana, and Dewey.

321. *HISTORY OF RELIGIONS*. Fall term. Credit three hours. Open to juniors and seniors, and to sophomores by consent of the instructor. M W F 12. Mr. BURTT.

A general survey of the development of ritual, practice, and belief in selected primitive religions and the religions of the Far East, of India, and of the West.

322. *PHILOSOPHY OF RELIGION*. Spring term. Credit three hours. Open to juniors and seniors, and to sophomores by consent of the instructor. M W F 12. Mr. BURTT.

A study of the major types of religious belief in the modern world in relation to their philosophical background and to the moral and social problems of today.

323. *DEDUCTIVE LOGIC*. Fall term. Credit three hours. Prerequisite, Philosophy 103, or consent of the instructor. M W F 2. Mr. BLACK.

A study of current methods and problems of formal logic, with discussion of relevant philosophical issues: Algebra of classes, propositional calculus, calculus of functions, the logical paradoxes, and the theory of types.

324. *INDUCTIVE LOGIC*. Spring term. Credit three hours. Prerequisite, Philosophy 323, or consent of the instructor. M W F 2. Mr. BLACK.

An introduction to the philosophy of induction and the foundations of probability. Topics to be discussed include: The justification of induction, connections between induction and probability, the classical and frequency views of probability, the "Law of Large Numbers."

325-326. *HISTORY OF POLITICAL THEORY*. Throughout the year. Credit three hours a term. Prerequisite: Philosophy 221-222 or 301-302, or consent of the instructor. T Th S 11. Mr. VLASTOS.

A study of the philosophical and ethical assumptions in each of the main types of Western political thought. Fall term: The political philosophies of Greece, Rome, and Medieval Europe. Spring term: The political philosophies of Modern Europe.

327. *THEORY OF KNOWLEDGE*. Fall term. Credit three hours. Open to juniors and seniors. Prerequisite, six hours of Philosophy or consent of the instructor. M W F 11. Mr. MALCOLM.

Verification and meaning; doubt and certainty; perception; contingent and necessary truths; knowledge of external objects and other minds.

424. *PHILOSOPHY OF SCIENCE*. Spring term. Credit three hours. Prerequisite, Philosophy 323, or consent of the instructor. T 2-4, Th 2. Mr. BLACK.

A critical analysis of scientific methodology with detailed study of such topics as causality, theories, fictions, measurement.

425. *ETHICAL THEORY*. Fall term. Credit three hours. Prerequisite, Philosophy 221-222, or 301-302, or 325-326, or consent of the instructor. M W F 10. Mr. BROWN.

An intensive study of selected periods in the history of ethical theory. Topic for 1949-1950: Modern English ethics from Hobbes through F. H. Bradley.

427. *RECENT PHILOSOPHY (1890-1940)*. Fall term. Credit three hours. Open to philosophy majors, graduate students, and others with the consent of the instructor. M W F 12. Mr. MURPHY.

Topic for 1949-1950: The metaphysical theories of Bradley, Bergson, and Whitehead.

[481. *AESTHETICS: ADVANCED COURSE*. Fall term. Credit three hours.

An intensive study of selected problems in the field. Not offered in 1949-1950.]

485. *PHILOSOPHY OF RELIGION: ADVANCED COURSE*. Spring term. Credit three hours. Prerequisite, Philosophy 322 or consent of the instructor. F 2-4, or hours to be arranged. Mr. BURTT.

An intensive study of selected problems in the field, with critical comparison of basic ideas in Judaism, Christianity, and Oriental religions.

SYMBOLIC LOGIC. (See Mathematics 382.)

575-576. *PLATO AND ARISTOTLE*. Throughout the year. Credit three hours a term. M 3-5. Mr. VLASTOS.

A philosophical study of the two ancient thinkers, with substantial readings from their works in translation.

579-580. *MODERN PHILOSOPHERS*. Throughout the year. Credit three hours a term. W 3-5. Fall term: Hume. Mr. BURTT. Spring term: Dewey and Meade. Mr. MURPHY.

[581-582. *SEMANTICS AND LOGIC*. Throughout the year. Credit three hours a term. Mr. BLACK. Not given in 1949-1950.]

[585-586. *ADVANCED ETHICS AND VALUE THEORY*. Throughout the year. Credit three hours a term. Open to graduates and seniors by consent of the instructor. First term prerequisite to the second. Messrs. BROWN and VLASTOS.

An intensive study of some of the main problems in ethics and social philosophy. Not given in 1949-1950.]

[587-588. *METAPHYSICS*. Throughout the year. Credit three hours a term.

An intensive study of some of the main theories and problems regarding reality and knowledge. Not given in 1949-1950.]

[590. *SEMINAR IN GREEK PHILOSOPHY*. Fall term. Credit three hours. Mr. VLASTOS. Not given in 1949-1950.]

[592. *SEMINAR IN MODERN PHILOSOPHY*. Spring term. Not given in 1949-1950.]

594. *SEMINAR IN PHILOSOPHICAL ANALYSIS*. Spring term. Credit three hours a term. Th 3-5. Mr. MALCOLM.

Topic for 1949-1950: Consciousness and thought.

595. *SEMINAR IN SEMANTICS AND LOGIC*. Fall term. Credit three hours. Open to graduate students. T 2-4. Mr. BLACK.

Topic for 1949-1950: Philosophy of Language.

039. *INFORMAL STUDY*. Open to qualified majors. (See italicized statement p. 90.) Messrs. BLACK, BURTT, MURPHY, VLASTOS.

049. *INFORMAL STUDY*. Open to qualified majors. (See italicized statement p. 90.) Messrs. BROWN, MALCOLM, SMART.

PHYSICS

Mr. L. P. SMITH, *Chairman*; Messrs. (C. P. BAKER, Nuclear Studies); L. L. BARNES; H. A. BETHE; G. COCCONI; D. R. CORSON; (T. R. CUYKENDALL, Engineering Physics); J. W. DE WIRE; R. P. FEYNMAN; C. W. GARTLEIN; G. E. GRANTHAM; K. I. GREISEN; P. L. HARTMAN; H. E. HOWE; J. A. KRUMHANS; J. S. LEVINGER; B. D. McDANIEL; P. MORRISON; C. C. MURDOCK; H. F. NEWHALL; L. G. PARRATT; J. S. SABA; (H. S. SACK, Engineering Physics); R. L. SPROULL; D. H. TOMBOULIAN; R. L. WALKER; W. M. WOODWARD, and R. R. WILSON.

For a major in Physics, the following courses must be completed: (1) in Physics, twenty-four hours of courses numbered above 116 (excluding course 200), which shall include at least three hours of Physics 210 or its equivalent and nine hours selected from classroom credit in Physics 215-254; (2) in related subjects, Mathematics 201, and twelve hours in one of the following groups: (a) Chemistry, (b) Astronomy, (c) Biological science (6 hours of this must not be an introductory course), (d) Philosophy (History 911 and 912 may be substituted for 6 hours of Philosophy).

103. *INTRODUCTORY PHYSICS*. Fall term. Credit three hours. Demonstration lectures, M F 9 or 12. One laboratory period as arranged. Mr. HOWE and assistants. Mechanics, sound, and heat.

104. *INTRODUCTORY PHYSICS*. Spring term. Credit three hours. A continuation of Physics 103. Prerequisite, Physics 103 or entrance Physics. Hours and staff as in Physics 103.

Electricity and light.

107. *INTRODUCTORY PHYSICS*. Fall term. Credit four hours. Demonstration lecture, W 11. Three recitations and one laboratory period a week, as arranged. Prerequisite, Calculus or concurrent registration in Mathematics 171. Mr. GREISEN, Mr. LEVINGER, and assistants.

Mechanics, heat and electricity. Primarily for students majoring in science.

108. *INTRODUCTORY PHYSICS*. Spring term. Credit four hours. A continuation of Physics 107. Prerequisite, Physics 107 or 103 and consent of the instructor. Hours and staff as in Physics 107.

Mechanics, electricity and light.

Note: Physics 115, 116, 117, and 118 form a sequence in a two-year continuous course in General Physics required of all students of engineering who are candidates for the degrees of B. Chem. E., B.C.E., B.E.E., B.Eng. Phys., and B.M.E. Demonstrations, theory, experiments, and problem drill. One lecture, two recitations, and one laboratory period a week, as assigned. (Consult instructor in charge for available recitation and laboratory periods other than the ones described below).

115. *MECHANICS*. Fall term. Credit three hours. Prerequisite, Calculus or simultaneous registration in Mathematics 161. Entrance physics is desirable but not required. Lecture, Th 9 or 11. Recitations, M F 9. Laboratory, M 2-4:30. Mr. GRANTHAM, Mr. NEWHALL, Mr. SABY, and assistants.

Kinetics, statics, elasticity, liquids, and mechanics of gases.

The laboratory work consists of measurements of length, acceleration, velocity, elasticity, harmonic motion, moment of inertia, mass, centripetal force, and density.

116. *HEAT, SOUND AND GEOMETRICAL OPTICS*. Spring term. Credit three hours. Prerequisites, Physics 115, Calculus or simultaneous registration in Mathematics 162. Lecture, Th 9 or 11. Recitations, M F 9. Laboratory, M 2-4:30. Mr. GRANTHAM, Mr. NEWHALL, Mr. SABY, and assistants.

Temperature, calorimetry, change of state, heat transfer, thermal properties of matter, elementary thermodynamics, wave motion, vibrating bodies, acoustical phenomena, reflection, refraction, mirrors, and lenses.

The laboratory work consists of measurements related to the above topics.

117. *ELECTRICITY AND MAGNETISM*. Fall term. Credit three hours. Prerequisites, Physics 115, 116, Calculus or simultaneous registration in Mathematics 163. Lecture, T 8 or 11. Recitations, T Th 10. Laboratory, M 2-4:30. Mr. TOMBOULIAN, Mr. NEWHALL, and assistants.

Introductory study of the fundamental laws of electric and magnetic fields and their applications to elementary circuit problems. Electrostatic fields and potential; steady currents, induced emfs, inductance, dielectrics, capacitance, and simple transients.

The laboratory work consists of basic measurements in direct current circuits.

118. *PHYSICAL ELECTRONICS AND OPTICS*. Spring term. Credit three hours.

Prerequisite, Physics 117. Lecture, T 8 or 11. Recitations, T Th 10. Laboratory, M 2-4:30. Mr. TOMBOULIAN, Mr. NEWHALL, and assistants.

Further study of topics in electricity such as, magnetic properties of matter, alternating currents, and electric oscillations.

Selected topics in thermionics, photoelectricity, gaseous conduction, motion of ions in electric and magnetic fields, physical optics, including interference, diffraction and polarization, radiation, and simple spectra.

The laboratory work consists of measurements in electronics such as the determination of work function, characteristics of photo cells, cut off curves of magnetrons, dispersion, diffraction, resolving power, polarized light, and photometry.

200. *PHYSICS FOR STUDENTS OF BIOLOGY AND MEDICINE*. Either term. Credit three hours. Prerequisite, six semester hours of college work in each of the following: Physics, Chemistry, and biological science. Students having grades below 70 in Physics 103 and 104 are not encouraged to elect this course. Lectures, T Th 12. Laboratory, T or Th 2-4. Mr. BARNES.

Lectures, demonstrations, and laboratory experiments dealing with such topics in molecular physics, electricity and magnetism, electromagnetic radiation and nuclear physics as are related to the study of biology and medicine.

203 or 205. *ADVANCED GENERAL PHYSICS*. Fall term. Course 203, credit three hours. Course 205, credit five hours. Prerequisites, Physics 107 and 108, or consent of the instructor, and Mathematics 172 (or in parallel). Lectures, M W F 9. Laboratory, included in Course 205, two afternoons a week, M W, W F, M F 1:40-4:30. Sections to be assigned by instructor. Mr. McDANIEL.

Mechanics, probability, wave motion, and sound.

204 or 206. *ADVANCED GENERAL PHYSICS*. Spring term. Course 204, credit three hours. Course 206, credit five hours. Prerequisites, Physics 203 or 205 and Mathematics 173 (or in parallel). Lectures, M W F 9. Laboratory, included in course 206, M W, W F or M F 1:40-4:30. Mr. CORSON.

Electricity, magnetism, optics, and atomic physics.

208. *PHYSICAL MECHANICS AND PROPERTIES OF MATTER*. Spring term. Credit three hours. Prerequisites, Physics 115 and Mathematics 161 and 162. Primarily for candidates for the degree of Bachelor of Engineering Physics. M W F 9. Mr. SACK.

Elements of kinematics; Newton's law, conservation laws; D'Alembert's principle; application to selected problems; hydrostatics; elementary fluid dynamics; elasticity; viscosity; surface tension.

210. *ADVANCED LABORATORY*. Either term. Credit three hours a term. Prerequisites, Physics 205 and 206, or the equivalent. Laboratory, T W or Th F 1:40-4:30. One discussion period to be arranged. Messrs. PARRATT, CORSON, CUYKENDALL, HARTMAN, McDANIEL, and WOODWARD.

Experimental work in a wide variety of fields is offered to meet the needs of the individual student. Considerable time may be spent on a relatively few topics, or many experiments may be performed to gain acquaintance in several fields. The laboratory work is individual, and stress is laid on independent work on the part of the student. Among the topics for which facilities are available are mechanics, acoustics, optics, spectroscopy, electrical circuits, electronics and ionics, heat and high temperature measurements, x-rays, crystal structure, cosmic rays, and nuclear physics.

215. *PHYSICAL OPTICS*. Fall term. Credit three or five hours. Prerequisites, Physics

206, or equivalent and Calculus. Lectures, M W F 9. Laboratory, Th F 1:40-4:30, also T W 1:40-4:30 if a second section is warranted. Mr. HARTMAN.

Huygens and Fermat's principles with applications to geometrical optics, velocity of light, Fraunhofer and Fresnel diffraction, polarization of light, double refraction, optical activity, electromagnetic characteristics, dispersion, absorption, and reflection.

225. *ELECTRICITY AND MAGNETISM*. Either term. Credit three hours. Prerequisite, Physics 206 or 117. Lectures, T Th S 9, and an optional problem period to be arranged. Mr. MURDOCK.

Electrostatic and electromagnetic fields, polarization of dielectrics and magnetic media, displacement current, plane electromagnetic waves, the Poynting vector.

236. *ELECTRICITY AND MAGNETISM*. Spring term. Credit three or five hours. Prerequisite, Physics 225 and Differential Equations. Lectures, T Th S 9. Laboratory T W 2-4:30 also Th F 2-4:30 if second section is desired. Mr. KRUMHANSL.

Circuit theory from the standpoint of electromagnetic fields. Validity and limitation of circuit concepts. Steady and alternating currents in circuits and networks, transients, distributed parameters, introductory high frequency topics.

242. *ANALYTICAL MECHANICS*. Spring term. Credit three hours. Prerequisites, Physics 205 or 208, and Mathematics 201, or their equivalents. T Th S 9. Mr. SPOULL.

Analytical mechanics of material particles, systems of particles, and rigid bodies; oscillations and forced vibrations; planetary motion; stability of orbits; Euler's equations, gyroscopic motion; Lagrange's equations.

243. *ATOMIC AND MOLECULAR PHYSICS*. Fall term. Credit three hours. Prerequisite, Physics 225. T Th S 9. Mr. WALKER.

The fundamental particles; statistical physics; the concepts of quantum mechanics; atomic structure and spectra; the periodic table; molecular structure and the chemical bond; fundamentals of nuclear physics.

254. *ELECTRONIC PROPERTIES OF SOLIDS AND LIQUIDS*. Spring term. Credit three or five hours. Prerequisite, Physics 243. Lectures, T Th S 9. Laboratory, Th F 1:40-4:30, also T W 1:40-4:30 if a second section is warranted. Mr. SACK.

Lattice structure; specific heat, lattice energy, elastic properties; electric conduction; thermoelectric effects; contact potential; barrier effect; lattice defects; dielectric, magnetic, and optical properties.

020. *INFORMAL STUDY IN PHYSICS*. Either term. Credit one to three hours a term. Reading or laboratory work in any branch of physics under the direction of a member of the staff. Hours to be arranged.

Note: For further information concerning the following courses see the Announcement of the Graduate School.

380. *ADVANCED LABORATORY*. Either term. Credit three hours. Prerequisite, Physics 210 or its equivalent. Laboratory periods to be arranged. Messrs. PARRATT, CORSON, CUYKENDALL, HARTMAN, McDANIEL, and WOODWARD.

[382. *HIGH TEMPERATURE MEASUREMENTS*. Spring term. Credit two hours. Not offered in 1949-1950.]

383. *X-RAY EXPERIMENTS*. Fall term. Credit two or three hours. Prerequisite, consent of instructor. Mr. PARRATT.

387. *SPECTROSCOPY*. Credit two or three hours. Prerequisite, Physics 380 or its equivalent. Given upon sufficient demand. Mr. PARRATT.

[388. *X-RAY DIFFRACTION BY CRYSTALS*. Credit two hours. Not offered in 1949-1950.]

391. *ELECTRONICS AND IONICS*. Fall term. Credit three hours. Prerequisite, one term of Physics 380. Two laboratory periods and one seminar. Mr. SPROULL.

393. *NUCLEAR PHYSICS LABORATORY*. Fall term. Credit two hours. Prerequisite, consent of instructor. Mr. DE WIRE.

396. *COSMIC RAY EXPERIMENTS*. Spring term. Credit two hours. Prerequisite, consent of instructor. Mr. GREISEN.

475. *THEORETICAL MECHANICS*. Fall term. Credit three hours. Prerequisite, Physics 242 or its equivalent. Mr. MORRISON.

476. *ELECTRODYNAMICS*. Spring term. Credit three hours. Prerequisite, Physics 225 or its equivalent. Mr. MORRISON.

477. *STATISTICAL MECHANICS AND KINETIC THEORY*. Fall term. Credit two hours. Prerequisites, Physics 475 and (or in parallel) Physics 485. Mr. FEYNMAN.

480. *THEORETICAL PHYSICS—READING COURSE*. Either term. Credit two hours. Mr. FEYNMAN.

485. *INTRODUCTORY QUANTUM MECHANICS*. Fall term. Credit three hours. Prerequisites, Physics 475 and 476. Mr. BETHE.

486. *APPLICATIONS OF QUANTUM MECHANICS*. Spring term. Credit three hours. Prerequisite, Physics 485. Mr. BETHE.

[491. *ADVANCED QUANTUM MECHANICS*. Fall term. Credit three hours. Not offered in 1949-1950.]

582. *X-RAY CRYSTALLOGRAPHY*. Spring term. Credit three hours. Prerequisite, Physics 225 or consent of the instructor. Mr. MURDOCK.

588. *X-RAYS*. Spring term. Credit three hours. Prerequisite, consent of the instructor. Mr. PARRATT.

681. *ADVANCED ELECTRON PHYSICS*. Fall term. Credit three hours. Prerequisites, Mathematics 201, Physics 225, and 391, or their equivalents. Mr. NEWHALL.

683. *THE THEORY AND PROPERTIES OF SOLIDS*. Fall term. Credit three hours. Prerequisite, Physics 485 or its equivalent. Mr. SMITH.

692. *ADVANCED ELECTRONICS LABORATORY*. Spring term. Credit three hours. Prerequisite, Physics 681. Mr. SMITH and Mr. SPROULL.

781. *NUCLEAR PHYSICS*. Fall term. Credit two hours. Prerequisites, Physics 243 and (or in parallel) Physics 485 and the consent of the instructor. Mr. WILSON.

782. *THEORY OF NUCLEI*. Spring term. Credit two hours. Prerequisites, Physics 485 and 781, or their equivalents. Mr. BETHE.

784. *COSMIC RAYS*. Spring term. Credit two hours. Prerequisite, a course in introductory Theoretical Physics. Mr. COCCONI.

[786. *THEORY OF HIGH ENERGY PHENOMENA*. Spring term. Credit two hours. Not offered in 1949-1950.]

080. *INFORMAL STUDY IN PHYSICS*. Either term. Special reading or problem work done under the direction of a member of the staff. Hours to be arranged.

090. *SPECIAL LABORATORY WORK*. Either term. Laboratory work in any branch of physics under the direction of a member of the staff. Hours to be arranged.

PSYCHOLOGY

Mr. R. B. MACLEOD, *Chairman*; Messrs. M. E. BITTERMAN, U. BRONFENBRENNER, R. DALTON, F. S. FREEMAN, J. V. HARALSON, H. S. LIDDELL, F. L. MARCUSE, T. A. RYAN, A. L. WINSOR.

For a major in Psychology, the following courses must be completed: (1) in Psychology, twenty-four hours, including Psychology 101, 102, and 204; at least six hours of the twenty-four should be chosen from Psychology 207, 208, 211, and 404; (2) in related subjects, fifteen additional hours including Statistics 101 and Physiology 303 or Human Growth and Development 201. The remaining hours are to be chosen in consultation with the adviser from courses in Biology, Chemistry, Education, Mathematics, Physics, Philosophy, Sociology and Anthropology, and Zoology.

Students intending to pursue advanced work in Psychology, or desiring information concerning particular sequences of courses in the subject leading to vocational careers, should consult a special bulletin issued by the Department. This bulletin assembles all the courses in Psychology and its ramifications, offered by the various schools and colleges of the University.

101. *ELEMENTARY PSYCHOLOGY*. Either term. Credit three hours. Open to freshmen. Fall term: Lectures, M W 9 or 11; Recitation, Th 8, 9, 10, 11, 12; F 8, 9, 10, 11, or S 8, 9, 10. Mr. MACLEOD and assistants. Spring term: Lectures, Th S 11; Recitation, M 8, 9, 10; T 8, 11, 12; or W 8, 9. Mr. ——— and assistants.

102. *ELEMENTARY PSYCHOLOGY*. Either term. Credit three hours. Prerequisite, Psychology 101. Spring term: Lectures, M W 9 or 11; Recitation, Th 8, 9, 10, 11, 12; F 8, 9, 10, 11; or S 8, 9, 10. Fall term: Lectures, Th S 11; Recitation, M 9, 10, 11, 12; or T 8, 11, 12. Mr. MARCUSE and assistants.

Psychology 101 and 102 are prerequisites to all later courses in Psychology. They deal with the basic problems and principles of human psychology, and are designed as a general foundation for the study of experimental, social, animal, and child psychology, for psychotechnology and for the psychology of the abnormal. Class demonstrations will supplement the lectures and recitations.

[203. *GENERAL PSYCHOLOGY*. Either term. Credit three hours. Lectures, T Th 10. Recitation, F 8, 9, or 12; S 9, 10, or 11. Mr. MARCUSE and assistants.

Not offered in 1949-1950.]

204. *LABORATORY IN EXPERIMENTAL PSYCHOLOGY*. Either term. Credit three hours. Prerequisites, Psychology 101 and 102. T Th S 9-11; M W F 2-4. Fall term, Mr. HARALSON and assistants. Spring term, Mr. ——— and assistants.

This course is required for all further laboratory work in Psychology. It provides elementary training in the methods of experimentation. A representative series of experiments drawn from the field of psychology will be performed by every student.

[205. *INTERMEDIATE COURSE IN PSYCHOLOGY*. Fall term. Credit three hours. Prerequisites, Psychology 101 and 102, and consent of the instructor. Not offered in 1949-1950.]

207. *PERCEPTION*. Fall term. Credit three hours. Prerequisites, Psychology 101 and 102, and consent of the instructor. M W F 12. Mr. ———.

The place of perception in psychology and its relation to everyday living. A review of the important experiments, with special emphasis upon recent developments and upon modern theories of perception.

208. *MEMORY AND THINKING*. Spring term. Credit three hours. Prerequisites, Psychology 101, 102, 204, and consent of the instructor. M W F 11. Mr. BITTERMAN.

A survey of the experimental literature dealing with the fundamental processes and conditions of learning and thinking.

210. *COMPARATIVE PSYCHOLOGY*. Fall term. Credit three hours. Prerequisites, Psychology 101, 102, 204, and consent of the instructor. Lectures T Th 11; laboratory hours to be arranged. Mr. BITTERMAN.

A systematic study of the phylogenetic development of the basic psychological functions and their underlying mechanisms.

211. *PHYSIOLOGICAL PSYCHOLOGY OF THE SENSES*. Fall term. Credit three hours. Prerequisites, Psychology 101 and 102. M W F 3. Mr. ———.

Lectures and demonstrations on the experimental psychology of the special senses together with a study of the nervous structures involved.

[213. *LEGAL PSYCHOLOGY*. Spring term. Credit three hours. Prerequisites, Psychology 101 and 102 or consent of the instructor. M W F 12.

Intended for pre-law students only. Applications of general psychological principles to problems of testimony, lie detection, and a consideration of abnormal behavior as applied to law. Not offered in 1949-1950.]

250. *PERSONALITY THEORY*. Fall term. Credit three hours. Prerequisites, Psychology 101 and 102. T Th S 9. Mr. BRONFENBRENNER.

A critical survey of theories of personality structure, function and development in the light of experimental research and clinical experience. Particular emphasis is given to the interplay between personality development and interpersonal and group behavior.

275. *HISTORY OF EXPERIMENTAL PSYCHOLOGY*. Spring term. Credit three hours. Prerequisite, senior standing and consent of the instructor. M W F 10. Mr. MacLEOD.

301. *CONTEMPORARY PSYCHOLOGY*. Spring term. Credit three hours. Prerequisite, senior standing and consent of the instructor. M W F 9. Mr. ———.

The emergence of modern psychology, existential psychology, behaviorism, Gestalt psychology, and psychoanalysis.

303. *THE NORMAL AND THE ABNORMAL*. Fall term. Credit three hours. Prerequisite, Psychology 101 and 102, or consent of the instructor. Lectures, T Th S 10. Mr. LIDDELL.

An introduction to the psychological defects and disorders.

309. *EXPERIMENTAL GROUP DYNAMICS*. Spring term. Credit two hours. For upperclass and graduate students. W F 2-4. Mr. BRONFENBRENNER.

An approach to the integrated study of human behavior in a social field. Examination is made of the role of perception, motivation, learning, personality dynamics, and social forces as they impinge, both genetically and situationally, on the behavior of

individuals and groups. Class material is drawn from current theory, research, and laboratory observation in the classroom.

375. *STATISTICAL METHODS IN PSYCHOLOGY*. Spring term. Credit three hours. Prerequisites, Psychology 204 and a first course in Statistics. Open only to seniors majoring in Psychology and to graduate students. M W F 2. Mr. RYAN.

An analysis of the methods for treating various kinds of psychological data. Tests of significance, correlational analysis and analysis of variance, in their application to psychological research.

401. *PSYCHOSOMATIC PROBLEMS*. Fall term. Credit three hours. Prerequisite, consent of the instructor. M W F 10. Mr. MARCUSE.

This course deals with certain aspects of clinical psychology with special reference to the role of the clinical psychologist in studying the etiology and therapy of physiological disorders.

403. *MINOR RESEARCH PROBLEMS*. Either term. Credit three hours. Prerequisites, Psychology 101 and 102, 204, and special courses required by the instructor. Hours to be arranged. The Staff.

Research in general, abnormal, animal, applied, physiological, and social psychology. The course is designed for students majoring in Psychology who are prepared to undertake original investigations.

404. *PSYCHOBIOLOGY*. Spring term. Credit three hours. Prerequisite, 101, 102 and junior standing. T Th S 10. Mr. LIDDELL.

The principal biological mechanisms of behavior with special reference to man.

440. *PSYCHOLOGY FOR ENGINEERING STUDENTS*. Either term. Credit three hours. Open by permission to students in Arts and Sciences. Mr. LIDDELL and assistants.

A survey of some of the basic concepts of psychology including such topics as motivation, emotion, learning, intelligence, personality, and individual differences.

441. *PSYCHOLOGY FOR STUDENTS IN THE SCHOOL OF INDUSTRIAL AND LABOR RELATIONS*. Spring term. Credit three hours. Lectures, T Th 11; Recitations, Th 2, 3 or F 12, 2. Mr. ——— and assistants.

A general survey course including such topics as motivation, learning, intelligence, personality, and individual differences.

450. *INDUSTRIAL PSYCHOLOGY*. Fall term. Credit three hours. Prerequisites, Psychology 101, 102, Statistics 101, or consent of the instructor. T Th S 10. Mr. ———.

A study of experimental and statistical analyses of psychological problems in industrial selection and training, fatigue and efficiency, advertising, selling, and market research.

451. *WORK, FATIGUE, AND EFFICIENCY*. Spring term. Credit three hours. Prerequisites, Psychology 101 and 102, or 440, or 441, or consent of instructor. T Th S 11. Mr. RYAN.

A survey of the external and internal factors which affect the efficiency, speed, and accuracy of human work. Consideration will be given to sedentary or "mental" work as well as to physical work, in relation to fatigue, monotony, rest, sleep, and the effects of noise, light, temperature, incentives, and social factors.

452. *ADVANCED INDUSTRIAL PSYCHOLOGY*. Fall term. Credit three hours. Prerequisites, Psychology 450 and 451 and consent of instructor. M W 2 and laboratory hours to be arranged. Mr. ———.

An introduction to research techniques in industrial psychology. Test construction, including analysis of reliability and validity, fatigue studies, morale surveys, job analysis, evaluating of training programs, advertising and market research. Laboratory exercises in the use of these techniques.

475. *TECHNIQUE OF EXPERIMENTATION*. Spring term. Credit three hours. For seniors and graduate students. T 2-4. Laboratory hours to be arranged. Mr. BITTERMAN.

Advanced training in the principles and methods of psychological research. The group will design and carry out experiments on selected problems in perception, motivation, emotion, learning, and thinking.

[502. *THE PSYCHOPHYSICAL METHODS*. Spring term. Credit three hours. Prerequisites, Psychology 204 and Statistics 101. M W F 2. Mr. ———. Not offered in 1949-1950.]

[510. *THEORY OF RESPONSE—SYSTEMS*. Fall term. Credit three hours. Primarily for graduate students. Prerequisite, consent of instructor. M W F 2. Mr. ———. Not offered in 1949-1950.]

520. *MOTIVATION*. Fall term. Credit three hours. Prerequisite, Psychology 101 and 102. M W F 9. Mr. ———.

A systematic study of the initiation, direction and regulation of behavior. The classic problems of instinct, emotion, conflict and will are examined in the light of evidence from current experimental, clinical and social research.

575. *SEMINAR IN PSYCHOLOGY*. Fall term. Repeated in the spring term. Credit three hours. Primarily for graduate students. M 7:30-9:30 P.M. The staff.

Intensive investigation of selected problems in the standard fields of psychological research. The seminar will be sub-divided into different groups according to subject-matter, each group to be under the direction of a different staff member.

576. *ADVANCED ABNORMAL PSYCHOLOGY*. Spring term. Credit three hours. Primarily for graduate students. Prerequisite, consent of the instructor. F 7-9:30 P.M. Mr. MARCUSE.

Intensive study of selected topics.

580. *CONDITIONING AND EXPERIMENTAL NEUROSES*. Spring term. Credit three hours. Prerequisite, consent of the instructor. Seminar, M 2-4:30 and an afternoon hour to be arranged. Mr. LIDDELL.

Seminar and demonstrations of phenomena of conditioned reflex action and neurotic patterns in animals.

601. *EDUCATIONAL PSYCHOLOGY*. Fall term. Credit three hours. Prerequisite, Human Growth and Development. Other qualified students may be admitted on consent of the instructor. M W F 11. Mr. FREEMAN.

The major facts and principles of psychology bearing on educational practice and theory.

607. *PSYCHOLOGICAL TESTS I*: Tests of intelligence and specific aptitudes. Fall term. Credit three hours. Not open to sophomores. Prerequisite, a course in psychology and a course in statistics; or consent of the instructor. T Th S 9. Mr. FREEMAN.

Basic psychological principles in the construction and use of individual and group tests of intelligence and specific aptitudes; theories of the nature of mental abilities; fields of application; intensive study of selected individual scales. Demonstrations in administering and interpreting individual scales.

608. *PSYCHOLOGICAL TESTS II*: Tests of personality and social behavior. Spring term. Credit three hours. Prerequisite, Psychology 607 or consent of the instructor. T Th S 9. Mr. FREEMAN.

Basic psychological principles in the construction and use of personality rating scales, personality inventories, projective techniques, and situational tests. Demonstrations.

618. *INDIVIDUAL DIFFERENCES*. Spring term. Credit three hours. Not open to sophomores. Prerequisite Psychology 607 or its equivalent, or consent of the instructor. T Th 2-3:15. Mr. FREEMAN.

The nature, causes, and implications of individual differences in human abilities and behavior. Study of atypical groups.

675. *SEMINAR IN HUMAN DEVELOPMENT AND BEHAVIOR*. Spring term. Credit two hours. Primarily for graduate students. Seniors may be admitted with the consent of the instructor. M 4-6. Mr. FREEMAN.

Recent experimental and clinical materials and theories, and their practical implications.

680. *PROCEDURES IN CLINICAL CHILD GUIDANCE*. Fall term. Credit three hours. Prerequisite, Psychology 607, or its equivalent. Primarily for graduate students; a limited number of seniors will be admitted. All students must have consent of the instructor. M 4-6, and conferences to be arranged. Mr. FREEMAN.

050. *INFORMAL STUDY*. Either term. Credit one, two or three hours. Members of the staff.

ROMANCE LITERATURE

Mr. MORRIS BISHOP, *Chairman*; Messrs. JEAN BRUNEAU, G. I. DALE, R. A. HALL, B. L. RIDEOUT.

For a major in French Literature, Italian Literature, or Spanish Literature, the following courses must be completed: (1) eighteen hours of courses in the literature of the major; (2) twelve hours of courses in a second literature (except that English 111-112 may not be counted); (3) in related subjects, eighteen hours to be selected from the Division of Literature, the Division of Modern Languages, Classics, History of Art, European History, German Literature, History of Music, History of Philosophy, Russian Literature, and Dramatic Production; except that the twelve hours of courses specified under (2) above may not be counted as a related subject.

FRENCH LITERATURE

301-302. *SURVEY OF FRENCH LITERATURE*. Throughout the year. Credit three hours a term. Prerequisite, French 201 in the Division of Modern Languages, or four years of entrance French, or consent of the instructor. The course may be entered in the second term. M W F 11. Mr. BISHOP.

Lectures in French and classroom discussions on French literature from the medieval period to the present day.

[311-312. *LITERATURE OF THE SIXTEENTH CENTURY*. Not offered in 1949-1950.]

313-314. *LITERATURE OF THE SEVENTEENTH CENTURY*. Throughout the year. Credit two hours a term. Prerequisite, French 301. The course may be entered in the second term. T Th 12. Mr. BRUNEAU.

Lectures in French and classroom discussions. The central theme is the rise of Classicism and its full fruition.

[315-316. *LITERATURE OF THE EIGHTEENTH CENTURY*. Not offered in 1949-1950.]

[317-318. *LITERATURE OF THE EARLY NINETEENTH CENTURY*. Not offered in 1949-1950.]

319-320. *LITERATURE OF THE LATE NINETEENTH CENTURY*. Throughout the year. Credit three hours a term. Prerequisite, French 302. The course may be entered in the second term. M W F 9. Mr. BRUNEAU.

Lectures in French and classroom exercises. The dominant ideas of the second half of the century and their expression in literature; the rise of Realism and the accessory and opposing movements.

[321-322. *LITERATURE OF THE TWENTIETH CENTURY*. Not offered in 1949-1950.]

361-362. *FRENCH CULTURE AND CIVILIZATION*. Throughout the year. Credit three hours a term. Prerequisite, proficiency in French, or the consent of the instructor. T Th 2. Mr. RIDEOUT.

Lectures in French and classroom exercises. A rapid survey of French political, social, economic, and religious history, of the development of French law, education, science, architecture, art, and music.

375-376. *MODERN FRENCH SEMINAR*. Throughout the year. Credit two hours a term. Mr. BISHOP.

An introduction to the methods and materials of research in French literature, by means of a collective study of a problem of French literary history.

ITALIAN LITERATURE

401-402. *DANTE*. Throughout the year. Credit three hours a term. Prerequisite, proficiency in Italian. Hours to be arranged. Mr. BISHOP.

Reading of the *Divina Commedia*, with a study of the background of the poem and its significance.

407-408. *SURVEY OF ITALIAN LITERATURE*. Throughout the year. Credit three hours a term. Prerequisite, proficiency in Italian. Hours to be arranged. Mr. HALL.

A study of the characteristic works of Italian writers from Petrarch to modern times.

SPANISH LITERATURE

[501-502. *SURVEY OF SPANISH LITERATURE*. Not offered in 1949-1950.]

503-504. *SURVEY OF SPANISH-AMERICAN LITERATURE*. Throughout the year. Credit three hours a term. Prerequisite, Spanish 201, or consent of the instructor. The course may be entered in the second term. M W F 11. Mr. DALE.

Lectures in Spanish and classroom discussions on literary developments in Spanish America, with reading of the most important works.

511-512. *CERVANTES*. Throughout the year. Credit three hours a term. Mr. DALE.

Reading of all the significant works of Cervantes, with critical, interpretative, and historical study.

521-522. *THE CONTEMPORARY SPANISH-AMERICAN NOVEL*. Throughout the year. Credit three hours a term. T Th S 10. Mr. DALE.

Extensive reading, with critical study of the major works.

[524. *THE MODERNIST MOVEMENT IN SPANISH-AMERICAN LITERATURE*. Not offered in 1949-1950.]

[575-576. *OLD SPANISH*. Not offered in 1949-1950.]

581-582. *CALDERON AND ALARCON*. Throughout the year. Credit two hours a term. Hours to be arranged. Mr. DALE.

For graduates and qualified undergraduates. A study of selected plays, serving as an introduction to methods of literary criticism.

[585-586. *THE PICARESQUE NOVEL*. Not offered in 1949-1950.]

RUSSIAN LITERATURE

Mr. VLADIMIR NABOKOV.

151-152. *GENERAL SURVEY OF RUSSIAN LITERATURE*. Throughout the year. Credit three hours a term. Not open to freshmen. Lectures and readings in English. M W F 11. Mr. NABOKOV.

Emphasis on the Nineteenth Century.

301-302. *SURVEY OF RUSSIAN LITERATURE*. Throughout the year. Credit three hours a term. Prerequisite, proficiency in Russian. M W F 12. Mr. NABOKOV.

Lectures in Russian and classroom exercises on the development of Russian literature, with particular emphasis on the nineteenth century.

311-312. *RENAISSANCE OF RUSSIAN POETRY*. Throughout the year. Credit three hours a term. Prerequisite, proficiency in Russian. Hours to be arranged. Mr. NABOKOV.

A study of Russian poetry from 1890 to 1925, of neo-romanticism and neo-classicism, from Blok to Pasternak and Khodashevich. The course is conducted in Russian.

SOCIOLOGY AND ANTHROPOLOGY

Mr. L. S. COTTRELL, JR., *Chairman*; Messrs. J. J. ADAIR, M. L. BARNETT, M. L. BARRON, N. N. FOOTE, L. GUTTMAN, A. R. HOLMBERG, A. H. LEIGHTON, M. E. OPLER, R. L. SHARP, E. A. SUCHMAN, F. C. WHITE, R. M. WILLIAMS, JR.

For a major in Sociology and Anthropology, the following courses must be completed: (1) twenty-four hours in Sociology and Anthropology in addition to Sociology and Anthropology 101, or its equivalent; (2) twenty-one hours in related subjects to be chosen with the approval of the adviser. All students majoring in this department must satisfactorily complete Statistics 101 and Sociology and Anthropology 201 and 202.

Students intending to pursue advanced work in Sociology or Anthropology, or desiring information concerning particular sequences of courses leading to graduate study or to careers within these fields should consult a special bulletin to be issued by the Department.

101. *INTRODUCTION TO THE STUDY OF SOCIETY*. Either term. Credit three hours. Open to all students although primarily intended for freshmen. Not open to those who have credit for Social Science 1 or Rural Sociology 1. M W F 8, 10, 12, or 2; T Th S 8, 10, 11. Messrs. BARNETT, BARRON, FOOTE, and WHITE.

An introduction to the study of societies as interrelated systems; selected major problems of contemporary American society as seen in the context of our own social system; social factors in personality formation.

102. *MAN AND CULTURE: AN INTRODUCTION TO ANTHROPOLOGY*. Spring term. Credit three hours. Open to freshmen. M W F 9. Mr. ADAIR.

A broad survey of the field of anthropology. Topics include: human origins, fossil man and prehistory; development of cultures in the Old and New World; the nature of culture; language and culture; contemporary native peoples; culture change.

104. *CONTEMPORARY SOCIAL PROBLEMS*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 101, or equivalent. Open to freshmen. T Th S 11. Mr. BARRON.

Major social problems of modern urban society viewed in terms of the factors underlying social disorganization and individual maladjustment.

201. *INTRODUCTION TO RESEARCH METHODS*. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 101, or equivalent. Not open to freshmen. M W F 10. Mr. SUCHMAN.

Problems of research design and techniques for gathering data in sociological research.

202. *ANALYSIS AND INTERPRETATION OF SOCIOLOGICAL DATA*. Spring term. Credit three hours. Prerequisite, Statistics 101 or the equivalent. Not open to freshmen. M W F 10. Mr. SUCHMAN.

The application of simple statistical and non-statistical techniques to the analysis of sociological data. Interpretation of evidence and consideration of sources of error and of bias.

[210. *THE FAMILY*. Spring term. Credit three hours. Prerequisite Sociology and Anthropology 101 or the equivalent. Not open to freshmen. Not given in 1949-1950.]

223. *DELINQUENCY AND CRIME*. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or equivalent. Not open to freshmen. T Th S 10. Mr. BARRON.

Comparison of juvenile delinquency and adult crime with special reference to the United States. Analysis of statistics on offenses and offenders; historical development of criminological theory; recent etiological trends; laws and court systems; police and penology; techniques of treatment and prevention.

228. *PROBLEMS IN MINORITY GROUP RELATIONS*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or the equivalent. Not open to freshmen. T Th S 10. Mr. BARRON.

The old world background of American minorities and patterns of immigration; critical analysis of minorities' contributions to American culture. Relations of ethnic institutions and American legislations to adjustment and assimilation. Problems of second generation Americans.

301. *SOCIAL PSYCHOLOGY: INTER-PERSONAL BEHAVIOR*. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 101 and one course in Psychology or the equivalent. Not open to freshmen. M W F 11. Mr. FOOTE.

Social psychological analysis of the processes and products of personal interaction.

302. *SOCIAL PSYCHOLOGY: GROUP DYNAMICS*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 101 and one course in Psychology or the equivalent. Not open to freshmen. M W F 11. Mr. FOOTE.

Social psychological analysis of the processes and products of intra- and inter-group behavior.

311. *PUBLIC OPINION*. Fall term. Credit three hours. No prerequisites. Not open to freshmen. M W F 11. Mr. SUCHMAN.

The nature and control of public opinion, including opinion formation and change. A study of the methods and techniques of public opinion and attitude analysis.

[312. *MASS COMMUNICATION MEDIA*. Spring term. Credit three hours. No prerequisites. Not open to freshmen. Given in alternate years. Mr. SUCHMAN. Not offered in 1949-1950.]

[314. *COLLECTIVE BEHAVIOR AND SOCIAL MOVEMENTS*. Spring term. Credit three hours. Prerequisite, Sociology and Anthropology 101 or equivalent. Not open to freshmen. Not given in 1949-1950.]

320. *POLITICAL SOCIOLOGY*. Fall term. Credit three hours. Prerequisite, Sociology and Anthropology 101 and consent of instructor. Not open to freshmen. M W F 9. Mr. WHITE.

Analysis of political institutions with emphasis on the relationship between the political leaders of a community and the social and economic leadership on the county and state level.

341. *NATIVE CULTURES OF THE NEW WORLD: NORTH AMERICA*. Fall term. Credit three hours. M W F 2. Mr. ADAIR.

A survey of the culture areas from the Eskimo to Mexico. Topics include: the peopling of North America, linguistic classification, cultural development, functional and historical analyses of selected groups.

342. *NATIVE CULTURES OF THE NEW WORLD: MIDDLE AND SOUTH AMERICA*. Spring term. Credit three hours. M W F 2. Mr. HOLMBERG.

A survey of the culture areas from Yucatan to Tierra del Fuego. Topics include: the peopling of South America, linguistic classification, archaeology, functional and historical analyses of selected groups.

[343. *NATIVE CULTURES OF OCEANIA*. Fall term. Credit three hours. Prerequisite, consent of instructor. Mr. SHARP. Not offered in 1949-1950.]

HUMAN RELATIONS IN INDUSTRY. (See Industrial and Labor Relations 44.)

[410. *POPULATION PROBLEMS*. Spring term. Credit three hours. Given in alternate years. Not given in 1949-1950.]

431. *STRUCTURE AND FUNCTIONING OF AMERICAN SOCIETY—I*. Fall term. Credit three hours. Prerequisite Sociology and Anthropology 101 or equivalent. Not open to freshmen. T Th S 9. Mr. WILLIAMS.

Institutional structure and social organization of the United States.

432. *STRUCTURE AND FUNCTIONING OF AMERICAN SOCIETY—II*. Spring term. Credit three hours. Prerequisite Sociology and Anthropology 431 or equivalent. Not open to freshmen. T Th S 9. Mr. WILLIAMS.

Analysis of the functional interrelations of groups and institutions in American society.

433. *THE SOCIOLOGY OF ECONOMIC CLASSES*. Fall term. Credit three hours. Prerequisite Sociology and Anthropology 101 or the equivalent and consent of the instructor. Not open to freshmen. T Th S 8. Mr. FOOTE.

A sociological analysis of the specific nature of American economic classes and their interrelations.

434. *SOCIAL PLANNING*. Spring term. Credit three hours. Prerequisite Sociology and Anthropology 101 or the equivalent and consent of the instructor. Not open to freshmen. T Th S 8. Mr. FOOTE.

A survey of objectives, methods and problems in social planning with special attention to community participation in the planning process.

[440. *COMPARATIVE SOCIAL AND POLITICAL ORGANIZATION*. Spring term. Credit three hours. Mr. SHARP. Not given in 1949-1950.]

[441. *COMPARATIVE RELIGIOUS SYSTEMS OF NON-WESTERN PEOPLES*. Fall term. Credit three hours. Mr. OPLER. Not given in 1949-1950.]

442. *COMPARATIVE ECONOMIC SYSTEMS OF NON-WESTERN PEOPLES*. Spring term. Credit three hours. M W F 10. Mr. HOLMBERG.

Analyses of economic systems of selected non-Western societies; methods of production, consumption, and distribution; economic integration; relation of the economy to other aspects of culture.

[444. *THE ARTS OF NON-LITERATE MAN*. Spring term. Credit three hours. Mr. ADAIR. Not given in 1949-1950.]

575. *THEORY OF CULTURE AND SOCIAL ORGANIZATION*. Fall term. Credit three hours. Open to seniors and graduate students with the consent of the instructor. T Th S 11. Mr. WILLIAMS.

Analysis of convergence in modern sociological thought. Includes consideration of sociological elements of major recent theories in related fields. The works of a number of the more important modern social scientists will be analyzed in developing a consistent theoretical framework.

601. *CULTURAL ANTHROPOLOGY*. Fall term. Credit three hours. Open to juniors, seniors, and graduate students. M W F 12. Mr. SHARP.

Problems in the comparative study of cultures; the component parts of culture and their interrelations; analysis of processes involved in the impact of cultures on each other and in change.

602. *CULTURE AND PERSONALITY*. Spring term. Credit three hours. Open to juniors, seniors, and graduate students. M W F 12. Messrs. LEIGHTON and SHARP.

A comparative study of personality formation in different cultures; behavior, both normal and abnormal, as a function of cultural determinants; the problem of type or group personality structure.

STATISTICAL REASONING. (See Statistics 101 under Interdepartmental offerings in Statistics.)

SEMINARS AND INFORMAL STUDY

020. *INFORMAL STUDY*. Throughout the year. Credit and hours to be arranged. Open to upperclass major and graduate students in Sociology and Anthropology. Members of the Department Staff.

075. *INFORMAL STUDY: REGIONAL ANTHROPOLOGY*. Throughout the year. Credit to be arranged. Far East: Messrs. LEIGHTON, OPLER, and SHARP. Middle East: Messrs. OPLER and SHARP; North America: Messrs. ADAIR, LEIGHTON and OPLER; Middle and South America: Mr. HOLMBERG; Oceania: Mr. SHARP; Africa: Mr. HOLMBERG.

For students who wish to acquire special competence in the anthropology of a recognized culture area or principal region of the world.

275-276. *SEMINAR IN RESEARCH METHODS IN SOCIOLOGY AND ANTHROPOLOGY*. Throughout the year. Credit two hours a term. Open to upperclass majors and graduate students in Sociology and Anthropology. W 3-5, Fall term. Spring term to be arranged. Mr. HOLMBERG and members of department staff.

Discussion of methodological theory and techniques in the collection and interpretation of sociological and anthropological data. The aim of this seminar will be to examine and integrate research methods in social science.

375. *SEMINAR IN SOCIAL PSYCHOLOGY*. Spring term. Credit two hours. Prerequisite, Sociology and Anthropology 301 or 302. W 2-4. Mr. COTTRELL.

[376. *SEMINAR ON PRESSURE GROUPS AND PROPAGANDA*. Fall term. Credit two hours. Mr. SUCHMAN. Not given in 1949-1950.]

377. *SEMINAR ON MEDIA OF COMMUNICATION*. Spring term. Credit two hours. Prerequisite, consent of instructor. Th, 2-4. Mr. Suchman.

475. *SEMINAR IN GROUP RELATIONS*. Spring term. Credit two hours. Prerequisite, consent of instructor. T 2-4. Mr. WILLIAMS.

[476. *SEMINAR: SOCIAL CHANGE AND SOCIAL PLANNING*. Spring term. Credit two hours. Not given in 1949-1950.]

SEMINAR IN HUMAN RELATIONS IN INDUSTRY. (See Industrial and Labor Relations 104.)

577-578. *SEMINAR ON THE URBAN COMMUNITY*. Throughout the year. Credit two hours a term. Prerequisite, consent of instructor. M 2-4. Mr. DEAN.

[604. *SEMINAR IN CONTEMPORARY CULTURE CHANGE IN SOUTHEAST ASIA*. Spring term. Credit two hours. Mr. SHARP. Not given in 1949-1950.]

[640. *SEMINAR IN ANTHROPOLOGICAL THEORY*. Spring term. Credit two hours. Mr. OPLER. Not given in 1949-1950.]

642. *SEMINAR IN APPLIED ANTHROPOLOGY FIELD LABORATORY*. Term to be arranged. Prerequisite, consent of instructor. Messrs. LEIGHTON and ADAIR.

Field training in New Mexico and Arizona. Designed for graduate students in the technical and social sciences. Research related to human problems resulting from technological change. Selected ethnic groups will be studied.

[643. *SEMINAR IN CULTURE AND CULTURE CHANGE IN INDIA*. Fall term. Credit two hours. Mr. OPLER. Not given in 1949-1950.]

644. *SEMINAR IN PERSONALITY STUDY AND INTENSIVE INTERVIEWING.* Spring term. Credit three hours. For graduate students majoring in human relations or closely related fields, preferably those interested in research. Prerequisite, consent of instructor. Additional field work to be arranged. T 10-12. Mr. LEIGHTON.

Training in methods of intensive interviewing and the making of personality studies.

645. *SEMINAR IN CONTEMPORARY CULTURE CHANGE IN MIDDLE AND SOUTH AMERICA.* Fall term. Credit two hours. F 3-5. Mr. HOLMBERG.

Anthropology applied to planned programs of culture change in Latin America; discussions of recent changes in native cultures and of social problems arising from the introduction of modern technology.

677. *SEMINAR IN CASE STUDIES IN APPLIED ANTHROPOLOGY.* To continue throughout the year. Students may register for both terms or either term. Credit two hours. Th 3-5. Mr. SHARP and Staff.

Case analyses of the relationship of social and technological problems that arise in the process of modernization and significant culture change.

775-776. *SEMINAR IN ADVANCED STATISTICAL METHODS.* Throughout the year. Credit two hours a term. Prerequisite, consent of instructor. Hours to be arranged. Mr. GUTTMAN.

SPEECH AND DRAMA

Mr. C. K. THOMAS, *Acting Chairman*; Messrs. H. D. ALBRIGHT, C. S. ANGELL, C. C. ARNOLD, R. R. CARSON, A. M. DRUMMOND, W. H. STANTON, H. A. WICHELS.

Students may elect a general major, or a major with emphasis on (1) Rhetoric and Public Speaking, (2) Phonetics and Speech training, (3) Dramatic Production. The following courses must be completed: (1) in the Department, twenty-one hours including nine hours from courses 101, 102, 111 (or 141), 333; (2) in related subjects, six hours of courses not taken in the freshman year in each of the following groups—(a) English; (b) Economics, History, Government, Sociology; (c) Philosophy. Of this total of thirty-nine hours, twenty-four must be in other than introductory courses.

Students planning to teach Speech should satisfy the basic requirements for teachers of English. For those preparing to teach English, the Department recommends fifteen to eighteen hours in Speech and Drama including courses 101, 111 (or 141), 333, 401.

INTRODUCTORY COURSES

101. *PUBLIC SPEAKING.* Either term. Credit three hours. Not open to freshmen nor to students who have taken Speech 103 or 105. M W F 8, 9, 10, 11, or 12; T Th S 8, 9, 10, or 11. Messrs. ANGELL, ARNOLD, CARSON, and assistants.

Practice in speaking, on subjects of current interest; methods of preparation and delivery; various types of speech experience, such as exposition, advocacy, reading aloud, discussion, and chairmanship; study of principles and of examples; conferences.

Foreign students and others whose pronunciation of English falls below the normal standard, and students with special vocal problems, are advised to confer with Mr. THOMAS before registering.

102. *PUBLIC SPEAKING.* Either term. Credit three hours. Prerequisite, Speech 101, 103, or 105. Fall term: M W F 11. Mr. ———. Spring term: M W F 11 or 12. Mr. ———.

Study of interest, persuasion, and psychology of the audience as problems of speech-making; experience in various forms of public address; conferences.

103. *PUBLIC SPEAKING*. For students in the School of Industrial and Labor Relations only.

111. *ORAL INTERPRETATION OF LITERATURE*. Spring term. Credit three hours. Not open to freshmen, nor to students who have taken Speech 141. M W F 12. Mr. ———.

Study, for understanding and appreciation, of poetry and prose selected from the best English and American writers; practice in reading aloud; conferences; drill.

131. *VOICE TRAINING*. Spring term. Credit two hours. Open to freshmen. Consult the instructor before registering. T Th 12. Mr. THOMAS.

An elementary course for the improvement of the speaking voice. Individual and group practice in the overcoming of such faults as nasality, weak quality, and indistinctness. Attention to the principles of voice production. Students with special vocal problems are advised to take this course before 101.

133. *TRAINING FOR STUTTERERS*. Fall term. Credit two hours. Open to freshmen. T Th 12. Mr. THOMAS.

The nature of the problem; corrective exercises; conferences.

141. *DRAMATIC INTERPRETATION*. Fall term. Credit three hours. Not open to freshmen, nor to students who have taken Speech 111; prerequisite, consent of the instructor. T Th S 10. Mr. ALBRIGHT.

Analysis and interpretative reading of various types of dramatic prose and poetry; principles of stage presentation; reports, individual exercises, and group rehearsal.

[175. *ART OF THE THEATRE*. Not offered in 1949-1950.]

PUBLIC SPEAKING: ORAL READING

205. *DISCUSSION*. Either term. Credit three hours. Open to sophomores and upper-classmen; not open to students who have taken Speech 103. Fall term: M W F 10. Spring term: M W F 9 or 10. Mr. ARNOLD.

[209. *ORAL INTERPRETATION OF LITERATURE*. Not offered in 1949-1950.]

213. *ARGUMENT*. Either term. Credit three hours. Prerequisite, Public Speaking 101, or consent of the instructor. M W F 10. Fall term: Mr. WICHELS. Spring term: Mr. ANGELL.

Practice in debate on contemporary public questions; study of principles of evidence and reasoning.

214. *ARGUMENT*. Spring term. Credit three hours. Prerequisite, Speech and Drama 213. M W F 10. Mr. WICHELS.

Advanced study of methods and types of argumentation; practice in cross-examination, and in forensic and parliamentary debate; study of noted arguments.

221. *FORMS OF PUBLIC ADDRESS*. Fall term. Credit three hours. Open by consent of the instructor to juniors and seniors who have had one course in public speaking. M W F 11. Mr. ARNOLD.

Study of legislative, legal, ceremonial, campaign, and sermon addresses. Critical examination of speeches by Burke, Whitefield, Erskine, Webster, Lincoln, Darrow, Roosevelt, and outstanding living speakers. Some practice in speech composition.

241. *PUBLIC OPINION AND THE METHOD OF ARGUMENT*. Spring term. Credit three hours. Not open to freshmen. M W F 11. Mr. WICHELS.

A critical study of the discussion of public affairs, oral and written, in various ages of democracy; the principal types, examples, and conditioning factors. Lectures, readings, and reports.

[275-276. *HISTORY OF PUBLIC ADDRESS*. Not offered in 1949-1950.]

[281-282. *BRITISH ORATORS*. Not offered in 1949-1950.]

283. *AMERICAN ORATORS*. Spring term. Credit three hours. Open to juniors and seniors by consent of the instructor. T 2-4:30. Mr. ARNOLD.

A study of leading American speakers from Colonial times to the Civil War.

[284. *AMERICAN ORATORS*. A continuation. Not offered in 1949-1950.]

[287-288. *THEORIES OF PUBLIC ADDRESS*. Not offered in 1949-1950.]

The Department calls attention to three prizes in Public Speaking, competition for which will be open in the spring term: The Woodford Prize, for seniors; the Class of 1894 Memorial Prize in Debate, for juniors and seniors; and the Class of 1886 Memorial Prize in Public Speaking, for sophomores and juniors.

SPEECH TRAINING AND PHONETICS

333. *ENGLISH PHONETICS*. Fall term. Credit three hours. Not open to freshmen. T Th S 11. Mr. THOMAS.

Principles of phonetics; study of English pronunciation, based chiefly on contemporary American usage; practice in phonetic analysis, and, where necessary, drill for the improvement of individual speech.

334. *PRINCIPLES OF PHONETICS*. Spring term. Credit three hours. Prerequisites, Speech 333. T Th S 11. Mr. THOMAS.

A study of the phoneme, sounds in combination, and sound change.

[336. *REGIONAL AND HISTORICAL PHONETICS*. Not offered in 1949-1950.]

351-352. *PRINCIPLES OF SPEECH CORRECTION*. Throughout the year. Credit three hours a term. T Th S 9. Mr. THOMAS.

Study of principles and methods, correlated with supervised practice in the Speech Clinic.

SPEECH CLINIC. For students working under the direction of the Department. Consult Mr. THOMAS.

DRAMATIC PRODUCTION

DRAMA AND THEATRE. (See Literature 301-302.)

401. *DRAMATIC PRODUCTION: DIRECTION*. Fall term. Credit three hours. For upperclassmen and graduates. M W F 11. Mr. STANTON.

Theory of stage direction; fundamentals of theatrical mounting; survey of practical phases of production. Lectures, exercises, and reports. Prerequisite for further work in Dramatic Production.

405. *ADVANCED DRAMATIC PRODUCTION: DIRECTION*. Fall term. Credit three hours. Open to upperclassmen by consent of the instructor. T 2-4 and an hour to be arranged. Mr. STANTON.

Laboratory practice in the direction and production of plays.

421. *ADVANCED DRAMATIC INTERPRETATION*. Spring term. Credit three hours. For graduates and, by consent of the instructor, for upperclassmen majoring in the Department. W 2-4:30. Mr. ALBRIGHT.

Practice in acting, directing, and group rehearsal, leading to public presentations in the Laboratory Theatre; individual drills, pantomimes, and reading exercises.

431. *DRAMATIC PRODUCTION: STAGECRAFT*. Spring term. Credit three hours. Prerequisite, consent of the instructor. Open to upperclassmen. M W 11 and T 2-4:30. Mr. STANTON.

The theory and practice of stage production; planning of small theatres; stage arrangement; problems and practice in scene construction, design, and elements of lighting. Lectures, demonstrations, reports.

433-434. *THEATRE PRACTICE*. Throughout the year. Credit two hours a term. Open by consent of the instructor to upperclassmen who have taken or who are taking Speech and Drama 141 or 401. Hours to be arranged. Messrs. STANTON, ALBRIGHT and the staff of the University Theatre.

Projects in the productions of the University Theatre.

437. *DRAMATIC PRODUCTION: STAGE LIGHTING*. Spring term. Credit three hours. T Th 12. Laboratory, Th 2-4:30. Mr. STANTON.

451. *HISTORY OF THE THEATRE*. Spring term. Credit three hours. Open to upperclassmen. M W F 12. Mr. DRUMMOND.

The development of the theatre, with special attention to the period theatres and theatrical styles which influence modern stage presentation.

455. *AMERICAN DRAMA AND THEATRE*. Fall term. Credit three hours. Open to juniors and seniors. M W F 12. Mr. DRUMMOND.

A study of the American Theatre and of the principal American plays, with emphasis on the drama as an experience of the national life and culture.

461-462. *PLAYWRITING*. Throughout the year. Credit three hours a term. F 2-4:30. Mr. DRUMMOND.

475. *THEORIES OF DRAMATIC PRODUCTION*. Fall term. Credit three hours. Primarily for graduates; open to seniors by consent of the instructor. W 2-4:30. Mr. DRUMMOND.

The chief theories of dramatic production in relation to aesthetic principles.

The Department calls the attention of students interested in Dramatic Production to the following courses: those listed under The Fine Arts; English 341-342, 345 and 369-370; History of Costume (in the College of Home Economics); Arts of Design (in the College of Architecture). Three prizes in playwriting are offered under the auspices of the Department in 1948-1949: the Heermans Prize for One-Act Plays on an American Theme; the University Theatre Prize for New York State Regional Plays (open both to graduates and undergraduates); and the Cornell Dramatic Club (no restriction as to theme).

ZOOLOGY

Mr. H. B. ADELMANN, *Chairman*; Messrs. L. C. COLE, P. W. GILBERT, D. R. GRIFFIN, S. L. LEONARD, J. W. PAPEZ, W. A. WIMSATT, B. P. YOUNG.

For a major in Zoology there must be completed: (1) Zoology 101-102, or 103-104, and eighteen other hours selected from Zoology 211-212, 222, 301, 304, 401-402, 404, 451, 452, 515-

516, Conservation 8, and Physiology 303; and (2) fifteen hours in related fields, selected from courses in Bacteriology, Chemistry, Biochemistry, Botany, Conservation, Entomology, Geology, Physics, Human Physiology, or Plant Breeding 101.

Introductory Zoology (Zoology 101-102), or General Zoology (Zoology 103-104), or their equivalents, is a prerequisite for all courses in the Department.

Provisions are made for a limited number of students to undertake Informal Study.

Choice of all courses should be made in conference with the student's adviser.

Students who are planning to study medicine should make sure that they select a major that will include the entrance requirements of the medical school of their choice. Information as to advisers and the entrance requirements of medical schools may be obtained at the office of Professor L. L. BARNES, Rockefeller 155.

101-102. *INTRODUCTORY ZOOLOGY*. Throughout the year. Credit three hours a term. If taken after Biology 1, credit two hours a term. Intended for students in Arts and Sciences. Zoology 101 prerequisite to Zoology 102. Lectures, T Th 9 or 12, Stimson G-25. Laboratory, M T W Th or F 2-4:20; T or F 10-12:20; or S 9-11:20. Stimson 104 and 116. Mr. YOUNG and assistants.

During the first term attention is centered primarily on human structure and function as an example of the organization and activities to be expected in multicellular organisms. Fundamental biological principles are presented which contribute to the student's understanding of himself and the world in which he lives.

The second term includes a systematic survey of the structures, functions, and life activities of representative types of animals from protozoans to man. The economic importance of animals to mankind and the origin and relationship of man to other animals are emphasized.

103-104. *GENERAL ZOOLOGY*. Throughout the year. Credit three hours a term. If taken after Biology 1, credit two hours a term. Intended for students in Agriculture and Home Economics. Lectures, T Th 8 or 11. Laboratory, M T W Th or F 2-4:20, M 10-12:20, or S 9-11:20. Mr. LEONARD and assistants.

This course will survey the various branches of the zoological sciences to serve as a background for advanced work in the study of animals.

The principles of zoology will be illustrated by the study of representative animals with emphasis on those of economic importance to agriculture and to man. Emphasis will be placed on the biology of the vertebrates including the structural, functional, developmental, and genetic aspects.

211-212. *COMPARATIVE ANATOMY OF VERTEBRATES*. Throughout the year. Credit three hours a term. Prerequisite, Zoology 101-102, or 103-104, or the equivalent. Lecture, M 8 or 9. Laboratory, M F or T Th 2-4:30; W F or T Th 8-10:30; or W 2-4:30 and S 8-10:30. Mr. GILBERT and assistants.

A thorough study and dissection of representative vertebrate types, including fish, amphibian, reptile, bird, and mammal, together with demonstrations on species other than the types dissected.

The course is intended to give students an evolutionary background for the study and appreciation of the structure of higher vertebrates, including man.

222. *PHYSICAL ANTHROPOLOGY AND HUMAN EVOLUTION*. Spring term. Credit three hours. Lectures, M W F 12. Mr. PAPEZ.

Eras of vertebrate evolution, with special reference to the primates; prehistoric man; physical anthropology; and modern races and peoples.

224. *COMPARATIVE NEUROLOGY*. Spring term. Credit three hours. Prerequisite, nine hours of Animal Biology. Lectures, T Th 12. Laboratory, M or W 2-4:30. Mr. PAPEZ.

A comparative study of the vertebrate nervous system based on dissections of brains of dog and man, and sections of primate brain stem; study of the neural mechanisms that determine the receptive, motor, and autonomic functions of the nervous system.

301. *HISTOLOGY: THE BIOLOGY AND DEVELOPMENT OF THE TISSUES*. Fall term. Credit four hours. Prerequisite, Zoology 101-102, or 103-104, and 211-212. Lectures, T Th 11. Laboratory, T Th 8-10:30 or 2-4:30. Mr. WIMSATT and assistants.

A general survey of the structure and development of the tissues. The treatment is general, designed to provide students of biology with a basis for the understanding of normal and abnormal structure of the vertebrates. Each student will make for his own use a series of typical microscopic preparations.

302. *SPECIAL HISTOLOGY: THE BIOLOGY OF THE ORGANS*. Spring term. Credit four hours. Prerequisite, Zoology 301. Lectures, W F 9. Laboratory, W F 2-4:30. Mr. WIMSATT and assistants.

A continuation of Zoology 301. Zoology 301 and 302 together give the fundamental facts of the microscopic structure and development of the body. There is also offered opportunity to gain knowledge of technique in the fixing, embedding, and sectioning of selected organs.

304. *VERTEBRATE EMBRYOLOGY*. Spring term. Credit five hours. Lectures, T Th 11, S 10. Laboratory, T Th 8-10:30 or 2-4:30. Mr. ADELMANN and assistants.

An introduction to general vertebrate embryology designed to provide a basis for the appreciation of biological problems. The material is treated comparatively with particular emphasis on the development of the amphibian, the bird, and the mammal. A few invertebrate forms are used where desirable for illustration.

305-306. *HISTOLOGY AND EMBRYOLOGY*. Throughout the year. For students of Veterinary Medicine only. Credit eight hours. Fall term: Lectures, W F 12. Laboratory, W F 2-4:30. Spring term: Lectures W F 9. Laboratory W F 10-1:00. Messrs. ADELMANN and WIMSATT.

This course aims to provide the student of veterinary medicine with a practical knowledge of the normal structure and development of the tissues and organs of the animal body by the direct study of them in the laboratory. The emphasis of the course is on the domesticated animals of particular interest to the veterinarian.

401-402. *ECOLOGY AND PHYSIOLOGY OF THE INVERTEBRATES*. Throughout the year. Credit three hours a term. Prerequisites, one year of general biology or introductory zoology plus organic chemistry and college algebra. Lectures M W 11. Laboratory W 2-4:30. Mr. COLE.

A course for advanced undergraduates and graduate students stressing function at the level of the individual organism. Emphasis will be on physiological processes as these relate to natural habitats, and on phylogenetic characteristics as these restrict the variety of habitats available for occupancy by various invertebrates. The methods of response and toleration physiology will be utilized to investigate life processes in various invertebrates exposed to experimentally varied conditions. The interpretation of life tables and mortality data will be introduced as experimental techniques.

404. *GENERAL ANIMAL ECOLOGY*. Spring term. Credit three hours. Prerequisites, Zoology 101-102 or 103-104, or their equivalent. Lectures W F 10. A total of 8 laboratory and field periods S 8-1. Mr. COLE.

An introduction to the local and world-wide distribution of animals with reference to conditions of existence; effects of environmental factors on animals; adaptations to special habitats; modification of environment by animals; principles of population growth, composition, and density control. The adaptations of local animals to particular habitats will be studied in the field and laboratory.

451. *COMPARATIVE PHYSIOLOGY*. Fall term. Credit three hours. Prerequisites, one year of Biology or Zoology and college courses in Chemistry and Physics. Organic Chemistry and Comparative Anatomy are also desirable. Lectures, W F 9. Laboratory, T W Th or F 1:40-4:30. Mr. GRIFFIN.

This course covers the important physiological mechanisms occurring in all of the major phylogenetic groups of animals. The chief physiological functions such as respiration, metabolism, digestion, circulation, excretion, muscle contraction, nerve action and physiological regulation are treated from the comparative point of view. Emphasis is placed on the functional adaptations of both vertebrates and invertebrates to their environments.

452. *GENERAL AND CELLULAR PHYSIOLOGY*. Spring term. Credit three hours. Prerequisites Zoology 451, Organic Chemistry and permission of the instructor. Histology and Calculus are also desirable. Seminars M 2-4. Laboratory, T W or Th 1:40-4:30. Mr. GRIFFIN.

This course deals with the basic properties and functions of living material at the cellular and molecular level. Individual laboratory projects and seminars will cover such topics as the chemical and physical basis of protoplasm, ultrastructure, permeability, secretion, the dynamic state of cellular constituents as demonstrated by tracer techniques, irritability, and the physico-chemical aspects of the nerve impulse and receptor systems. The seminars will consist of discussion of the reading and the presentation and criticism of papers prepared by the students.

[515-516. *INVERTEBRATE ZOOLOGY*. Throughout the year. Credit three hours a term. Prerequisites, Zoology 101-102, or 103-104, or equivalent. Lecture, S 9. Laboratory, F 2-4:20, and S 10-12:20. Mr. YOUNG. Not offered in 1949-1950.]

Course deals with the body plans, the physiology, taxonomy, and the development of the major groups of animals lacking backbones. Life histories of animals affecting the welfare of man are stressed. Field trips permit the observation of these animals in their natural environments.

Open to students interested in animals, including undergraduate majors and graduate students in the various fields of biology.

040. *RESEARCH PROBLEMS*. Ordinarily limited to seniors only. Credit to be arranged. Problems may be undertaken in any phase of Zoology, but the consent of the instructor concerned is a prerequisite. Hours to be arranged.

ADDITIONAL COURSES IN BIOLOGICAL SCIENCE

These courses may be counted in the ninety Arts hours required for the A.B. degree.

GENERAL BIOLOGY (Biology 1, College of Agriculture). Throughout the year. Credit three hours a term. The course may be begun in either term. Not open to students who have had both Zoology 101-102 and Botany 1. If Biology 1 is taken after either

Zoology 101-102, or Botany 1, credit two hours a term. Lectures and demonstrations, M W 9 or 11. Laboratory, M T W Th or F 2-4:30, or T or S 10-12:30. Mr. HOOD and assistants.

An elementary course planned to meet the needs of students majoring outside of the plant and animal sciences; particularly adapted as the first year of a two-year sequence in biology for the prospective teacher of general science in the secondary schools. The course deals with the nature of life, life processes, the activities and origin of living things. It covers the organization of representative plants and animals, including man as an organism, and the principles of nutrition, growth, behavior, reproduction, heredity, and evolution.

ELEMENTARY TAXONOMY AND NATURAL HISTORY OF VERTEBRATES (*Conservation 8, College of Agriculture*). Throughout the year. Credit three hours a term. Prerequisites, Zoology 101-102, or 103-104, or Biology 1. Lecture, M 8. Laboratory, M W or T Th 2-4:30. Mr. HAMILTON and Mr. RANEY.

Lectures on fishes, amphibia, reptiles, birds, and mammals, dealing with the principles of classification and nomenclature, characteristics, relationships, and bionomics of these groups. The laboratory gives practice in the identification of North American species. Field studies of the local fauna are undertaken during the fall and spring. During May, field trips will be taken at 5:30 A.M.

GENERAL ORNITHOLOGY (*Conservation 9, College of Agriculture*). Spring term. Credit three hours. Open to all students. Lecture, W 11. Field work and laboratory, M W or T Th 2-4:30. Mr. ALLEN and Mr. KELLOGG.

Introduction to the study of birds, particularly the local species; their songs and habits; designed to give a working knowledge to those wishing to study birds as an avocation, and fundamental to those planning advanced work in ornithology or wild life conservation. Laboratory work with bird skins is based on the field work.

GENERAL ENTOMOLOGY (*Entomology 12, College of Agriculture*). Fall term. Credit three hours. Prerequisite, Biology 1, Zoology 101-102, or Botany 1. Lectures, W F 9. Practical exercises, T W Th or F 2-4:30. Mr. PATE and others.

Lectures on the characteristics of orders, suborders, and the more important families, and on the habits of representative species; practical exercises in studying the structure of insects, their biology, their habits, and their classification.

PHYSIOLOGY

303. *HUMAN PHYSIOLOGY*. Either term. Credit three hours. Prerequisite, a previous course, either in high school or college in Biology and in Chemistry. Open to students in the Colleges of Arts and Sciences, Home Economics, Agriculture, and others. M W F 10. Mr. DYE and Mr. COLLIER.

This is an introductory course designed primarily to present fundamental and practical information concerning the physiological processes and systems of the human body. Lectures, illustrations, and demonstrations.

305. *ENDOCRINOLOGY AND METABOLISM*. Fall term. Credit three hours. Prerequisites, six or more hours of Biology, and a previous or parallel course in Organic Chemistry. Open to upperclassmen and graduate students. M W F 8. Mr. DYE.

A study of metabolism, animal heat, excretion, endocrinology, and reproduction. Illustrated lectures.

INTERDEPARTMENTAL COURSES

The following course is offered cooperatively by the departments of Zoology and Psychology:

201-202. **HUMAN GROWTH AND DEVELOPMENT.** Throughout the year. Credit three hours a term. Not open to freshmen. Prerequisite, a laboratory science, preferably General Biology or Zoology. Course 201 is prerequisite to course 202. Course 201—Fall term: Lectures, T Th 10; Recitation, M 8, T 8, 9, 11, 12, Th 8, F 8, 10, 11. Mr. PAPEZ. Course 202—Spring term: Lectures, T Th 10; Recitations, Th 9, Th 11, F 8, 10, S 10. Mr. FREEMAN.

The aim of this course is to integrate information about structural, physiological, behavioral, and intellectual aspects of growth and development that will help educators to understand human individuals as functioning organisms in a social environment. The materials of the course are selected from pertinent fields, including embryology, genetics, anatomy, physiology, neurology, hygiene, sociology, cultural anthropology, developmental psychology, and education.

STATISTICS

Interdepartmental Committee: Mr. J. E. MORTON, *Chairman*, Messrs. M. BLACK, L. S. COTTRELL, D. ENGLISH, W. F. FEDERER, W. FELLER, L. GUTTMAN, M. KAC, H. J. LOBERG, P. J. McCARTHY, F. A. PEARSON, R. A. RYAN, A. SCHULTZ, E. A. SUCHMAN.

A knowledge of statistical reasoning is becoming a necessary part of a general education, since such reasoning is essential in many walks of life. The layman as well as the specialist has need for some comprehension of this subject. In the theoretical and applied sciences, statistical methods are used more and more for summarizing data, making estimates, and deriving valid inferences. Principles of statistical reasoning are used in designing efficient procedures for surveys, tests, and experiments as well as in analyzing and interpreting the results.

In recognition of common interests in statistics, a number of departments and schools have joined in sponsoring the following courses: (A detailed description of the courses is given in the Announcements of the colleges and schools offering the course). Of the courses listed below and offered by departments in other Colleges, only Industrial and Labor Relations 40 and 41 may be counted in the ninety Arts hours required for the Bachelor of Arts degree.

GROUP I: Courses in Group I are introductory and are regarded as preparatory for Group II. For this reason, credit may be given for only one of the courses in Group I.

STATISTICS I (Statistical Reasoning). ILR 40. Credit three hours.

MATHEMATICAL STATISTICS. Math. 711-712. Credit six hours. Prerequisite, Calculus.

STATISTICS. Ag. Econ. 111. Credit three hours.

ELEMENTARY INDUSTRIAL STATISTICS. Industrial and Engineering Admin. 3241 (students taking this course will, as a rule, have had a course in calculus). Credit three hours.

STATISTICAL METHODS OF ANALYSIS. Plant Breeding 211. Credit three hours.

GROUP II: The prerequisite for the courses in Group II, with the exception of Math. 721-722, is one term of Statistics. A student intending to take several of these courses may elect them in any order. Members of the Interdepartmental Committee on Statistics will be glad to assist in making a choice from the offerings.

STATISTICS II. ILR 65. Credit three hours.

PROBABILITY. Math. 721-722. Credit six hours. Prerequisite, Calculus.

ANALYSIS AND INTERPRETATION OF QUANTITATIVE DATA IN PSYCHOLOGY. Psych. 375. Credit three hours.

ANALYSIS AND INTERPRETATION OF SOCIOLOGICAL DATA. Sociology 202. Credit three hours.

DESIGN OF SAMPLE SURVEYS. ILR 46. Credit three hours.

ECONOMIC STATISTICS. ILR. 41. Credit three hours.

EXPERIMENTAL METHODS. Plant Breeding 212. Credit two hours.

STATISTICAL QUALITY CONTROL. Industrial and Engineering Admin. 3242. Credit three hours.

MILITARY SCIENCE AND TACTICS

(Students who have been enrolled in the Armed Services and students completing satisfactorily the first four terms of the Naval ROTC program are excused from the requirement.)

1. *BASIC COURSE.* Throughout the year. This course, conducted throughout the year, is required (with the exception of those specified above) of all able-bodied first-year and second-year male students who are American citizens and candidates for a baccalaureate degree. The requirements of Military Science and Tactics must be completed in the first two years of residence. Otherwise, the student will have to obtain consent of the Faculty to register again in the University. For students entering with advanced standing, the number of terms of Military Science required is to be reduced by the number of terms which the student has satisfactorily completed (whether or not Military Science was included in his program) in a college of recognized standing. Three hours a week on any afternoon from Monday through Friday, commencing at 1:40 P. M.

2. *ADVANCED COURSE.* Throughout the year. Credit three hours a term. This course appeals to those students who are aware of the country's need for specially trained men in the event of a national emergency, and to those potential leaders who desire advanced training in leadership. Students who have completed the Basic Course or have had one year of service with any of the Armed Forces, are eligible for enrollment. Six months with the Armed Forces credits a student with one year of the Basic Course toward Advanced ROTC requirements. By taking a second year of the Basic Course, he may complete this requirement. Five hours a week are required.

Tactics and Technique is taught in six of the arms and services including Air, Field Artillery, Ordnance, Signal Corps, Quartermaster Corps, Veterinary; and the attendance at one summer camp for six weeks is required. Instruction is also provided in such general subjects as Military Problems of the United States; Psychological Warfare; Military Leadership, Psychology and Personnel Management; Command and Staff Functions, by specialists in these fields, including lectures from other departments, schools, and colleges of the University.

During the course, the student receives a substantial government allowance and a regulation officer's uniform. The complete course covers two years.

Completion of the Advanced Course qualifies students for commissions as Second Lieutenants of the Officers' Reserve Corps, U. S. Army, or U. S. Air Force.

NAVAL RESERVE OFFICERS TRAINING CORPS

The course in Naval Science, which is four years in length, and normally requires three classroom hours a week plus certain laboratory periods and summer cruises, is designed to prepare the student to accept a commission either in the Line, Marine Corps, Supply Corps, or the Civil Engineer Corps of the Regular Navy or the Naval Reserve. In the case of students pursuing a five-year course at this University, the Naval Science course may be taken during either the first or the last four years. Undergraduates in the Naval ROTC may take any university course leading to a baccalaureate degree. Students are entered in either of two categories: Regular and Contract.

Regular Students gain admission through nationwide examination conducted by the Naval Examination Section of the College Entrance Board. Tuition, books, and usual fees are paid by the Navy, and, in addition, students are paid \$600.00 a year. They are required to serve two years as Ensigns in the Regular Navy, or Second Lieutenants in the Marine Corps, upon graduation.

Contract Students are selected by the Professor of Naval Science from applicants of the freshman class who have already been admitted to the College of Arts and Sciences. They are paid approximately \$24.00 a month their junior and senior years, are commissioned in the Naval Reserve or the Marine Corps Reserve, and are placed on inactive duty upon graduation.

Candidates in both categories must have attained the age of seventeen years before September first of the year of enrollment and must not have attained the age of twenty-five years before July first of the year in which commissioned.

For further information write to the Professor of Naval Science, Naval ROTC unit, Cornell University, Ithaca, N. Y.

All NROTC students enrolled in the College of Arts and Sciences must fulfill all of the requirements of that College as well as the requirements of the Naval ROTC, which include, in addition to twenty-four hours of Naval Science subjects, the following:

- (1) By the end of the sophomore year, every student must have satisfactorily completed one year of college physics.
- (2) By the end of the sophomore year, every student must have completed satisfactorily mathematics courses through trigonometry.
- (3) Every student must achieve proficiency in written and oral expression. The College will prescribe standards of proficiency and determine procedures necessary to achieve them.
- (4) Each student shall take such instruction in swimming as to qualify him as a First Class Swimmer as described in Nav Pers 15007, *Physical Fitness Manual of the U. S. Navy*. In addition, skill in elementary lifesaving and resuscitation should be acquired.

The following Naval Science courses may be counted among the ninety hours within the College of Arts and Sciences:

N. S. 301. *PILOTING AND NAVIGATION*. Credit three hours.

N. S. 302. *ADVANCED NAVIGATION AND TACTICS*. Credit three hours.

Twelve of the remaining eighteen hours of required Naval Science courses may be counted among the thirty hours which may be taken outside the College of Arts and Sciences by students in the College.

PHYSICAL TRAINING: MEN

(Students who have been discharged from the Armed Forces are exempted from this requirement.)

All undergraduate men (with the exception of those specified above) must pursue four terms of work, three hours a week, in Physical Training. Ordinarily, this requirement must be completed in the first two years of residence; postponements are to be allowed only by consent of the University Faculty Committee on Military Science and Physical Training.

Exemption from this requirement may be made by the Committee designated above, when it is recommended by the medical office or when unusual conditions of age, residence, or outside responsibilities require it.

For students entering with advanced standing, the number of terms of Physical Training required is to be reduced by the number of terms which the student has satisfactorily completed (whether or not Physical Training was included in his program) in a college of recognized standing. Mr. WILSON and assistants.

PHYSICAL EDUCATION: WOMEN

(Students who have been discharged from the Armed Forces are exempted from this requirement.)

All undergraduate women (with the exception of those specified above) must complete this requirement in the first two years of residence. For students entering with advanced standing, the number of terms of Physical Training required is to be reduced by the number of terms which the student has satisfactorily completed (whether or not Physical Training was included in his program) in a college of recognized standing.

6. *PHYSICAL EDUCATION FOR WOMEN (Freshmen)*. Fall and spring. Three hours a week. Misses ATHERTON, BATEMAN, NEWMAN, REYNOLDS, STEWART, Mrs. BAIRD, Mrs. FISHER.

Required of all Freshmen: fundamentals. Required of all students: rhythmic. Other activities: archery, badminton, baseball, basketball, bowling, canoeing, folk and square dancing, field hockey, golf, individual gymnastics, modern dance, outing (skiing, skating, hiking), riding, riflery, soccer, tennis, and volleyball.

7. *PHYSICAL EDUCATION FOR WOMEN (Sophomores)*. Fall and spring. Three hours a week. For description, see course 6.

THE DANCE

(Credit for this course will be counted among the thirty hours of "non-Arts" courses allowed by this College.)

200. *PRE-CLASSIC DANCE FORMS*. Either term. Credit three hours. Prerequisites, consent of the instructor and elementary dance composition and technique. M 4:30, T 4:30, Th 7:30. Miss ATHERTON assisted by Miss RIVERS.

201. *MODERN DANCE FORMS*. Either term. Credit three hours. Prerequisite, Dance 200. M 4:30, T 4:30, Th 7:30. Miss ATHERTON assisted by Miss RIVERS.

202. *CHOREOGRAPHY FOR SOLO AND GROUP*. Either term. Credit three hours. Prerequisite, Dance 200 and 201. M 4:30, T 4:30, Th 7:30. Miss ATHERTON assisted by Miss RIVERS.

203. *INFORMAL STUDY*. Offered to only exceptionally qualified students.

There will be research in dance history, periodicals, and consultation hours for direction of students' study required in addition to the further study of dance composition.

204. *INFORMAL STUDY*. Registration by invitation of the instructor. Prerequisites, Dance 200, 201, and 202. Hours to be arranged. Miss ATHERTON.

CAMP COUNSELOR TRAINING

Spring term. Credit two hours. Lectures, first seven weeks, M and W 2. Laboratory, second seven weeks, M and W 2-5. Miss STEWART.

A study of values of camping; organization and administration of camps; qualifications and responsibilities of the counselor; instruction in camp crafts.



CORNELL UNIVERSITY OFFICIAL PUBLICATION

The issues of this publication are designed to give prospective students and other persons information about Cornell University. No charge is made except for the *Directory of Staff*, the *Directory of Students*, and *A Book of Pictures*.

The prospective student should have a copy of *General Information* and a copy of one or more of the following Announcements:

Graduate School, Medical College, Cornell University-New York Hospital School of Nursing, Law School, College of Arts and Sciences, College of Architecture, College of Engineering, School of Business and Public Administration, New York State College of Agriculture, Two-Year Courses in Agriculture, Farm Study Courses, New York State School of Industrial and Labor Relations, New York State College of Home Economics, Department of Hotel Administration, New York State Veterinary College, School of Nutrition, School of Education, Department of Military Science and Tactics, Summer Session, Annual Report of the President.

Correspondence regarding these publications should be addressed to

CORNELL UNIVERSITY OFFICIAL PUBLICATION
ADMINISTRATION BUILDING, ITHACA, N. Y.